

PERSONALITIES

By George F. Taubeneck

Development of Specialty Selling Formula

The eighth instalment of the editor's story on the Development of the Specialty Selling Formula by John H. Patterson, founder of the National Cash Register Co., appears on this page. Readers who knew John Patterson are invited to submit anecdotes about Patterson and his methods—incidents which might be illustrative of any of the material they may read herein. These anecdotes will be incorporated into the general story, with full credit given to those who send them in to us.

Numbers of readers have been sending us information amplifying the material in this series—information which will be inserted and correlated into future instalments.

Birth of Factory Open-House Policy

(Continued from Last Issue)

"That's peculiar," we say, and ask the guide about it. His reply is that President Patterson adopted this plan 15 years ago, so as to have the operatives keep the machinery clean. "If the machinery is black, they won't see the dirt," he said. "Paint it a light color, and they'll wipe the dirt off."

"The air is very pure," you say to your guide. "It is changed every few minutes," he replies. "It is pumped from the tops of the buildings so that it will be clean and fresh."

"Anybody knows that bad air makes dull, listless employees, but not all manufacturers are far-seeing enough to remember this and arrange for pure, ever-changing air. The N.C.R. did this years ago."

Had modern complete air-conditioning systems been available in those days, we reluctantly interrupt Mr. Gibbs to conjecture, Patterson undoubtedly would have been among the first to install such equipment.

What temperature-and-humidity controlled air will do to increase the efficiency of employees is now definitely known; in fact, it has been measured by scientists. Back in the first decade of the century Patterson guessed what engineers later proved. What's more important, he did something about it—with the meagre equipment available at the time. Now go on with Mr. Gibbs, (excuse us, please, for the interruption):

"Here is the treasurer's department. Fortunately the day we go through is Friday, and we see a sight that is as remarkable as it is unusual. The N.C.R. Co.'s Dayton payroll, for factory labor only, is \$85,000 a week."

"This does not include salesmen or officers. The company pays this vast amount weekly, in new, bright gold, silver, and copper. No checks; no bills."

"And, looking into the treasurer's room, we see this \$85,000 spilled all over a big table. A dozen men are counting it and putting the different amounts in envelopes—bright yellow gold; new silver; what an impression it makes on us!"

"If you are a very prominent personage, the entire nine or ten buildings will have flags of all nations flying in your honor, and everywhere you go, you will find bulletins telling you who you are and why the flags are flying—and you will feel awfully stuck up and proud."

"Now we are in the great lunch room. Instead of china plates, silver-plated hot water plates are used. These are double, and have a reservoir for steaming hot water. This keeps the meat and vegetables piping hot."

"If we are asked to lunch, we will remember not to ask for pepper, mustard, or other condiments, for they are not there. We'll be satisfied with salt, and we'll get nothing fried, and no rich gravies or sauces, no pork, no veal, but plenty of good roast beef, lamb, or chicken."

"And now the guide tells you that the factory lecture is about to begin. We take the elevator down to the lecture hall."

In another article published in *Printer's Ink* some time later, Mr. Gibbs describes a lecture session for visitors to the "National Cash" plant. After looking, they would stop and listen.

First the story of N.C.R.'s origin and development was given, Mr. Gibbs recalls, following which the lecturer took up a discussion of landscape gardening, using lantern slides for illustration.

Visitors were urged, by means of slides, to use these simple lessons as a means toward the beautification of their own yards and gardens.

Then followed several reels of Kine-

macolor motion pictures, which set Mr. Patterson back the neat, round sum of \$25,000. At the close of the lecture, all visitors were given souvenirs, after which they were shown to their cars.

"And all visitors," concluded Mr. Gibbs, "took with them the memory of a model factory."

Potent as was this publicity method, the N.C.R. president did not depend upon it alone to carry word of his plant throughout the country. Through a highly efficient press bureau, he exploited almost everything the company did. Like Abraham Lincoln and Henry Ford, he didn't care so much what people said about him so long as they said something.

Birth of Employees' Question Box

Patterson found early in his career that his employees frequently had many good ideas, but failed to express them. He believed that everyone from vice president to bootblack could contribute something to his enormous fund of practical business knowledge and toward the progress of the N.C.R. Co.

(This idea doesn't have a helluva lot to do with specialty selling, but practically every manufacturer of a specialty product has adopted—and adapted—it, just as they have taken over Patterson's ideas on salesmanship and promotion. So we have included, as a sort of country cousin, the story of this Patterson development, too.)

In order to afford opportunity for the expression of these ideas, he stationed "suggestion boxes" at strategic points around his offices and factory, and paid cash for original suggestions received thereby—whether or not they could be immediately utilized.

Later he obtained small automatic registers to replace the experimental "suggestion boxes." The employee wrote his suggestion, tore off the slip, and the carbon copy was retained in the machine. More elaborate suggestions were submitted on regular forms.

It might be expected that the man who had such implicit faith in contests as a means to further every worthy end, would also place the suggestion box on a competitive basis.

"Instead of paying for a suggestion, we found that greater enthusiasm was aroused and more suggestions offered by making a contest," he once explained. "We have two contests in each year, one ending June 30 and the other December 31. Twelve hundred dollars is offered in 128 prizes."

Cash prizes ranged from \$100 for the best suggestion down to 80 prizes of \$5 each. Each prize winner also received a medal and a certificate signed by the president.

A banner (showman to the end) was awarded the highest ranking department, the award being based on several points—total prize money won by department members, number of prize winners, number of suggestions adopted, etc.

Ultimately it was found advisable to turn the handling of suggestions over to a special department created for that purpose.

A committee composed of department heads passed upon the suggestions deemed eligible for prizes, each suggestion being classified according to the subject with which it dealt. Each was so handled that no judge knew the source of the offering.

Employees in every department contributed their ideas, and the suggestion department received ideas on all phases of the business, from welfare work to salesmanship. Some of them were put into actual use, although not so many as Patterson had anticipated at first.

In deciding prize winners in these contests, all suggestions made by one employee were lumped together, so that the winner would be the person submitting the most acceptable suggestions, not the best single suggestion.

When two persons submitted the same idea, the one sending it in first was given credit for it. All rejected suggestions were returned to their source with notes explaining the reason why they were not accepted.

Patterson could say of his suggestion box idea that it, too, "paid." Cash value of the few suggestions which really did find their way into use was almost inestimable. He once remarked that the best of the mechanical improvements in the register were due to suggestions received from employees.

It was not, however, this material contribution to the company's progress that Patterson most valued. He considered that the greatest value of the system was that it brought cre-

ative employees with many good ideas to the fore.

He realized that frequently the workman with imagination and initiative could not advance or gain recognition if his ideas never received expression. By establishing a market for these ideas, he could prospect in a hitherto untapped mine of intelligent suggestions.

He soon discovered that the same men and women were consistently submitting valuable ideas. J. H. was not an employer to let such interest go unrewarded. These employees were invariably promoted. Frequently they reached positions of high authority.

"And in addition to that," Mr. Patterson said, "the morale of the organization is strengthened and the enthusiasm kept up. The employee is encouraged to observe, think and suggest, and that alone makes a better man of him."

"He knows that if he gets into the limelight through his suggestions, he is going to get a better job, and hence he will have no excuse for saying, 'No matter what I do, I cannot get any further along.'"

Ever since Patterson first demonstrated that the maintenance of an employee suggestion system is a dynamically practical way to obtain the help and goodwill of the working force, the growing number of such systems has continued to bring evidence back to the original doorstep that this idea was a winner.

Westinghouse Electric & Mfg. Co. has developed a suggestion system which is an excellent example of the suggestion system in full bloom.

Worked out after a study of conditions in its own plants, and after digesting the rules by which other existing systems were conducted, the plan operated by this electrical product manufacturer is one essentially easy to install and maintain, and one which requires a minimum of labor and records to operate.

In direct supervision of this system, a committee for handling—usually composed of five members—is located at each plant. Committee membership revolves at yearly intervals, with the exception of the chairman and secretary.

Employees are provided with a regular form on which to contribute suggestions, although good ideas are acceptable on any type of paper. Originally, locked boxes were stationed throughout the plant to receive suggestions. Now suggestions are submitted through office and shop mail, instead.

Suggestion forms contain a printed list on which is indicated the nature of suggestions which might be most useful. This is not intended to limit the suggestions, but to direct the thoughts of the personnel along certain helpful lines.

For systematic treatment of suggestions, they are indexed according to names of contributors, and according to the subject covered. After a suggestion is received, it is numbered serially for filing. Copies are made and distributed to the departments best fitted to weigh their merits.

When departmental heads submit a reply, a copy (if the suggestion is not adopted) is sent to the contributor, and another is filed along with the original suggestion. The contributor is notified immediately if the suggestion is accepted.

Committee members meet at least once each month. Worthy suggestions, recommended for acceptance by the departmental heads to which they were referred, are considered. The committee then determines how much money should be awarded the winning suggesters.

Awards given by this company are ordinarily based upon 10 per cent of a year's savings which the committee estimates that acting on the suggestion will permit. Because it is not always possible to estimate what the savings might be, a table has been formulated governing the amount of awards in such cases.

This table allots a \$2.50 reward for suggestions that are not original, and do not have appreciable money value, but which should be adopted, despite the expense involved. The sum of \$5.00 is mentioned as a reward for suggestions which, though not original, have appreciable money value difficult to estimate.

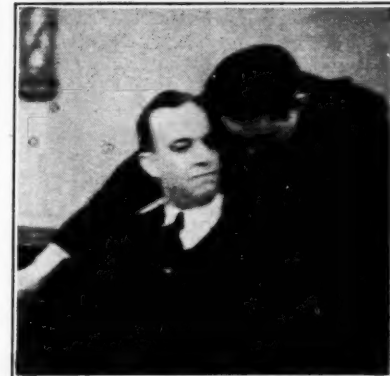
For suggestions that are not original, but which have considerable money value estimated on an annual basis, \$10.00 is awarded. This amount is also given for suggestions which are original, but have no appreciable money value.

There is a \$15.00 award reserved for suggestions that are original and have considerable money value, and a \$15.00 reward is also stipulated for "special suggestions."

It is surprising to note that of all the suggestions received, from 25 to 30 per cent are adopted—most of them being contributed by the shop workers. Approximately 20 per cent of the employees furnish suggestions each year. Amounts paid for suggestions have averaged \$5.86 each, ranging from \$2.50 to \$500.

Basic requirements for a profitable suggestion system, as set up by this

Listener-Inner



Frank Pierce, Frigidaire's household salesmanager, hears via the grapevine that there's dirty work at the crossroads.

prominent manufacturing concern, include the following:

1. Wholehearted support must be accorded by the management.
2. "Foremen's resistance" must be forestalled.
3. All suggestions—even criticisms—must be taken in an impersonal manner.
4. The committee should include one shop worker, so that the management can get the employees' viewpoint.
5. As many of the force should be encouraged to participate as possible.
6. All suggestions are to be acknowledged upon receipt, and acted upon, when possible, within 30 days.
7. Reasons for rejecting non-acceptable suggestions should be sent to the contributor, with the request that he reply, if unsatisfied with the reason.
8. Each suggestion adopted should be paid for promptly.
9. Preliminary payments should be made for patentable suggestions. When the patent is issued and the major claims allowed, an additional award should be considered.

Among the benefits of a properly handled suggestion system, this company tabulates the following:

1. A Suggestion System supplies a satisfactory point of contact between management and the employees—intangible benefits outweighing the obvious ones.
2. It gives access to a source of ideas otherwise untapped. Foremen are discovered and elevated to their positions when it is discovered that they have ideas.
3. While the majority of suggestions will be of small monetary value, an occasional one will be really valuable and the total will be equivalent to a considerable sum of money saved—or gained—for the company.
4. Some matters cannot be brought to the management's attention through other channels.

Patterson's Advertising Policies

Starched with self-esteem, stiff as the collars of that era, advertising at the turn of the century was as stilted and stulted as it was "conservative." Patterson, himself, must have become accustomed to criticism (if indeed he deigned to notice it at all), but his advertising department and his methods of advertising were constant subjects of ridicule. His advertising policies seemed beyond comprehension, and therefore his contemporaries thought they must be wrong.

As a matter of fact, Patterson had the simplest of policies. "Make it simple and direct." Members of his advertising personnel who could not or would not conform to this fundamental idea were speedily replaced. He insisted that every piece of copy should be literal and obvious enough for the dullest cash-register prospect to understand.

We can best present his opinions of what he considered good advertising by quoting from an address which he delivered on the subject in Paris, about 1910 or 1911. Said he:

"The trouble with most advertising is that it isn't direct enough. It is a curious thing that many of us, when we write, become unnatural in our methods and our expressions. We would not talk to a man that way if we had him seated in front of us."

"Then we would act natural and tell him our story in a plain, simple, direct way, but the moment we try to put these same thoughts on paper, our expression becomes stilted. We are unnatural. We get away from the simple, direct style."

"This makes our advertising that much less effective. Some writers seem to think it necessary to have a preamble or an introduction to the main facts about their goods, instead of plunging right in and telling the things that they should tell about them."

"They confuse the reader, throw him off the track and he loses interest before he gets one-quarter through the advertisement."

"Another great mistake is in saying too much. Everybody does not care for a course dinner."

"An advertisement put in a newspaper or magazine goes before hundreds of thousands of prospective purchasers. Every word, therefore, should be carefully studied, the type display simple and easy to read, the sentence short, the words short, and such that no one can misunderstand them."

"When you talk to a hundred thousand or more people through the use of printed matter, you should make your advertisement just as effective as you would your talk if you were to address these same people in a large hall."

"If I could get all of our prospective purchasers in one room together and talk to them about our goods, I would be very careful about what I was going to say to them."

"I would prepare my speech well in advance. I would go over it a number of times, and I would see to it that every sentence and every word counted for something."

"Try to write as you would talk. Be natural. Use plain, simple English, the simpler the better. Write your advertisements so that a child can understand them, and you needn't worry about anyone else."

"Don't put anything in your advertisement not actually needed to convey your idea. Simplicity of language, simplicity of design—these make the strongest and best advertisements."

"Always remember that an advertisement has no chance to talk back. If a salesman goes to see a man and uses an argument about the goods, and the prospective purchaser offers an objection, the salesman has a chance to say something in return."

"An advertisement cannot do this. It must depend for its effect on the first impression it makes on the reader. If it is so complex that the reader does not understand it, then the entire effect of the advertisement is lost."

"You have no second chance at a man unless you write a second advertisement, and then you cannot be sure that the same man will see the second advertisement," Mr. Patterson asserted in his address.

"A person should remember that an advertisement is different from a book. A man buys a book to read it and is interested in it, but his attention must be attracted to an advertisement."

"Therefore, it is very important to have the type display so plain and simple that it will be easy for him to read it. If the type is made complex or covered with a lot of fancy rules and ornaments, it becomes hard to read, and the man will pay no attention to it."

"If, on the other hand, it is set up in very plain type, his attention becomes attracted," he continued.

"Many persons say that a fancy border is needed so as to serve as a frame, but a border is not like the frame of a picture, as there the frame does not detract from the colors of the painting, and a picture often needs something to separate it from other things in the room."

"It is a mistake to use ornaments in type display. Suppose a salesman did the same thing in his talk with a prospect. Suppose he stopped in the middle of a sentence and waved his arms and described an ornament. What would be the effect on the prospect?"

"And yet that is what you ask a man to do when you put a fancy curved ornament or similar device in the middle of an advertisement."

"Do not put anything in an advertisement that is not needed. Strengthen it as much as you please with strong lettering and good pictures, but leave out everything that does not form a part of the advertisement itself."

"It is a mistake to suppose that very large type is the most prominent. We all remember how, when we were at school and we were told to look for the name of a country on the map, as a rule we could not find it because it stretched all the way across the country, whereas we could easily find the name of a city because it was set up in small type with plenty of white space around it."

"Lower case letters are better for display than all capitals. This is because 99 per cent of the reading that we do is with lower case letters. All newspapers, magazines, and journals are set up in lower case letters."

"Our eyes become accustomed to seeing these lower case letters, and thus it becomes easier for us to read them."

"Type is the printed expression of a person's ideas. It lacks the strong convincing power of a person's delivery, and nothing should accompany it which will lessen its force even the slightest degree."

"It is a mistake to use too many styles of type in setting up an advertisement. The fewer styles of type used, the simpler will be the effect. Never use any fancy letters of any kind."

(To Be Continued Next Week)

REFRIGERATION NEWS

ESTABLISHED 1926. MEMBER AUDIT BUREAU OF CIRCULATIONS. MEMBER ASSOCIATED BUSINESS PAPERS. MEMBER PERIODICAL PUBLISHERS INSTITUTE

VOL. 16, No. 2, SERIAL NO. 338
ISSUED EVERY WEDNESDAYEntered as second-class
matter Aug. 1, 1927

DETROIT, MICHIGAN, SEPTEMBER 11, 1935

Copyright, 1935, by
Business News Pub. Co.THREE DOLLARS PER YEAR
TEN CENTS PER COPYCleveland and
St. Louis Sales
Show IncreaseSt. Louis Retail Sales Up
5,132 Units; Cleveland
Sales to Dealers Gain

Reports on six months retail sales of household electric refrigerators in St. Louis recently compiled show an increase over the similar 1934 period of almost 25 per cent. Cleveland distributor-to-dealer sales in also just reported, showed an increase, with the total for seven months as great as for the first seven months last year.

A total of 26,823 electric refrigerators were installed in St. Louis by dealers and distributors during the first six months of 1935, compared with a total of 21,691 installations during the same period of 1934, reports A. E. Schanuel, director of the Electric Refrigeration Bureau of St. Louis.

This is an increase of 5,132 units, or 23.65 per cent.

Distributor to dealer sales of electric refrigerators in the Cleveland area for the month of July were 2,876 units as compared with 2,386 units in July, 1934, reports Ralph H. Jones, secretary of the Electric League here.

Total distributor-to-dealer sales through July were 17,776 units, as contrasted with 13,469 units during this seven-month period last year. In giving these comparative figures, Mr. Jones expressed the belief that the figures mentioned for 1934 were high by at least 20 per cent, because the method of collecting them was not so complete as it is this year.

Sales so far this year, Mr. Jones states, are at least equal to last year's sales.

Outstanding feature of this July's sales record, Mr. Jones declares, is its marked contrast with last year's sales curve. Reported distributor to dealer sales decreased notably in July, 1934. This year there has been a gradual leveling off, since sales have nearly maintained the record of the early summer selling season.

Service Men Convene
In Detroit Oct. 23

DETROIT—The second annual three-day convention of the Refrigeration Service Engineers' Society will be held at the Fort Shelby hotel here Oct. 23, 24, and 25.

Feature of the convention will be a manufacturers' educational exhibit, in which a wide variety of refrigeration products will be displayed, with engineers in charge to explain application and operation, with servicing pointers. Convention sessions and exhibits will be held in the Spanish Room of the hotel.

Morning sessions will include papers and discussions by various refrigeration authorities, and afternoons will be devoted to visits to refrigerator and refrigeration accessories manufacturing plants in the city. Entertainment features will be provided for the evenings.

Idaho Distributor Boosts Volume through
Village Dealers & Carload Order Policy

BOISE, Idaho—With 75 per cent of its dealers in cities of less than 10,000 population, Walker Electric Co., Kelvinator distributor in this territory, has rung up sales totaling nearly 300 per cent of its quota during the first 10 months of the fiscal year.

The Walker Co. has obtained 100 per cent dealer coverage in small towns, and only one dealer in its territory is under quota. Another dealer, the Pendleton Music House of Pendleton, Ore., is 400 per cent above quota, and the others are running from 200 to 400 per cent ahead of the sales figures set for them.

New policy adopted early this season by the Walker Co. was to have dealers pool their orders for shipment in carload lots. Dealers are allowed an extra 5 per cent for carload shipments, since it is estimated that it costs this much to warehouse electric refrigerators.

Although few dealers are in a posi-

When Sheboygan Dealers Put on August Sales Drive



Sheboygan dealers sold 251 electric refrigerators during their special August sales campaign. (1) Frank W. Greusel, Milwaukee, general chairman of the drive, with Miss Clara Dean, General Electric Co. home economist. (2) The pre-campaign banquet, attended by 70 dealers and salesmen.

Two Well-Planned Cooperative Sales Campaigns Prove Effective

Sheboygan August Sales
Top 7 Month Total

SHEBOYGAN, Wis.—Successfully combating stubborn sales resistance through a cooperative campaign, manufacturers, dealers, distributors, and the utility company supplying power succeeded in selling 251 refrigerators in Sheboygan in an intensive five weeks' campaign, 35 more than had been sold here all year prior to that time.

The campaign, conducted between July 25 and Aug. 31, when the refrigeration season was practically over in northern Wisconsin, faced numerous difficulties.

Sheboygan, a city of 10,700 electric meter users, had only 1,440 families with electric refrigerators prior to the start of the campaign. Total sales from Jan. 1 to July 1 had been only 216 boxes. In the five weeks' effort, even though late in the season, more boxes were sold than in all the rest of the year.

The saturation point on electric refrigeration in Sheboygan was only 13.4 per cent, as compared with the national figure of 34 per cent. Dealers were faced with natural ice campaigns, a low average income, and a non-responsive buying public. In addition, the old argument of climate—Wisconsin's cold winters—was encountered.

Manufacturers and distributors wanted to find out what was the matter with the Sheboygan market, and how to combat sales resistance. As a test campaign, nine major manufacturers and the Wisconsin Power & Light Co. united with local dealers to organize the Sheboygan Electrical Refrigeration Bureau. A fund of \$2,000 was subscribed for a cooperative newspaper advertising campaign, involving 1,050 inches of space during the five-week period. Manufacturers participating were Kelvinator, Westinghouse, General Electric, Grunow, Crosley, Hotpoint, Fairbanks-Morse, Frigidaire, and Norge.

Results of the campaign proved that success of any refrigeration campaign depends on good man-power, well-trained and drilled. Frank W. Greusel of Maurer-Greusel Co., Milwaukee, president of the Wisconsin Radio, Refrigeration, and Appliance

Association, was general chairman. Whereas most cooperative sales efforts start slowly and build to a peak, the Sheboygan campaign acted in reverse, 100 boxes being sold the first week.

The campaign was built around the story of health and savings through electric refrigeration. It included a distribution of merchandising credit certificates to 3,000 selected homes by Western Union messengers, a "cold cookery" school sponsored by the Sheboygan Press, the offer of bargain electric rates by the power company, and a detailed home demonstration plan. Concerted effort was directed toward lift-box chests, selling at low prices over a 36-month period, in order to reach the pocketbook of the low income citizen.

A banquet, attended by 70 dealers and salesmen, opened the campaign, and outside speakers were brought in to address the men at weekly "pep" meetings. These included Harry B. Hall, executive vice president of Klauvan Pietersen-Dunlap Associates, Inc., Milwaukee advertising agency; (Concluded on Page 2, Column 3)

Parker Puts 'Trunk-Type'
Pistons in New Line
Of Compressors

LOS ANGELES—Parker Mfg. Co. has introduced a commercial compressor designed with trunk-type pistons, which it is featuring this year in connection with the milk-cooling equipment it manufactures.

Principal feature of the "trunk-type" compressor design is that it eliminates the slugging of oil, saving wear on the parts and preventing mixture of oil with the refrigerant, declares H. C. Parker, sales manager.

The units are available in sizes up to and including 20 hp., with either methyl chloride or Freon as the refrigerant.

Suction line connects with the compressor at the center of the trunk piston, and the refrigerant gas does not go into the crankcase.

Oil rings in the bottom of the pistons keep the oil in the crankcase. A sight glass gauge with shut-off valves is mounted on the side of the crankcase, so that the level of oil in the compressor can be seen at all times.

A rotary type oil seal and V-belt drive are standard equipment on all units. Refrigerant-cooled cylinder heads are standard on all 1½ hp. and larger air-cooled units. Water-cooled cylinder heads are standard on model DW-4275—¾-hp. units and larger.

In operation, with the Parker Frostkist direct expansion aerator milk-cooling equipment, the refrigerator (Concluded on Page 14, Column 5)

Fogel to Distribute M & E
Units in Philadelphia

PHILADELPHIA—Fogel Refrigerator Co. of this city, manufacturer of refrigerated display cases, has been appointed exclusive distributor for commercial refrigerating machines manufactured by Merchant & Evans Co., reports F. E. Wilson, sales manager of the M & E refrigeration division.

M & E had furnished units for Fogel cases for a number of years, Mr. Wilson states.

Drive in Northern Calif.
Boosts 6 Month Sales

SAN FRANCISCO—A vigorous campaign on electric refrigeration, conducted during May by the Electric Appliances Society of Northern California in cooperation with Pacific Gas & Electric Co., resulted in sales of 21,655 units during the first six months of 1935, compared with 14,457 for the same period last year.

Sales during June totaled 6,614 units, exceeding those of the campaign month, 5,227, by 1,387 units. The June figure was 4,000 over last June's mark, which was only 2,165 units.

Dollar volume of retail sales for the first six months of 1935, figured at last year's national average of \$174 per unit, was \$3,767,970.

The following makes of refrigerators were included in the campaign: Apex, Atwater-Kent, Crosley, Cyclops, Frigidaire, General Electric, Gibson, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Stewart-Warner, and Westinghouse.

To sell a total of 11,841 electric refrigerators during May and June, the Society and the utility laid down a barrage of newspaper advertising in 85 California dailies and weeklies, and followed it up with special demonstration programs, floor and window displays, and extensive publicity.

A 48-inch advertisement was prepared by the Society, for one insertion in each of the 85 newspapers selected. Local dealers and distributors were urged to tie in with the advertising campaign as prominently as possible, so as to benefit by the public interest which it aroused. Exact date of publication was regulated so as to be most advantageous for each community.

Dealers and distributors in the various communities were urged to have their local newspapers run special refrigeration sections, to draw the attention of prospects more forcibly to their products during the campaign.

To aid newspapers in the formation of these special pages, a quantity of suitable publicity material was prepared, in the form of a four-page clip sheet. Copies were sent to dealers for distribution among their local newspapers. Illustrations, showing movie stars and others with captions telling of their preference for (Concluded on Page 2, Column 1)

Kansas City Store 'Pays' Customers to Buy
Refrigerators in Free Electricity Offer

KANSAS CITY—Jones Store Co., local department store, not only is offering to sell its customers a big-family-size electric refrigerator without any down payment, but is literally paying them to take it away.

In addition to the regular service and guarantee, the store is offering free electricity for a year to every person purchasing the 7.8-cu. ft. refrigerator which it is selling for \$159.50.

Under the store's plan, the customer has only to sign for the refrigerator, upon which act he is paid \$15 to cover the cost of the electricity which the unit will consume during its first year.

This sum was determined by a national test on the refrigerator, which showed a yearly cost of \$14.73 for current consumption.

Industry Cracks
Monthly Sales
Record in JulyShipments of 167,000 Units
Puts 7 Mo. Total Close
To 1,350,000 Mark

DETROIT—Sales of 167,000 household electric refrigerators by manufacturers to distribution outlets during July topped the best previous July in the history by more than 30 per cent, according to estimates made by ELECTRIC REFRIGERATION NEWS.

Effects of the manufacturer-distributor-dealer assault on the summer slump are reflected in the July sales record, with the total for the first seven months being pushed to 1,345,000, as compared with sales of 1,103,500 units by manufacturers to distributors and dealers for the first seven months of 1934.

July world shipments of household electric refrigerators by 14 members of the Household Refrigeration Section of the National Electrical Manufacturers Association (Nema) totaled 152,364 units.

In the first seven months of the current year Nema companies have sold 1,224,118 household electric refrigerators. This compares with a total of 1,003,150 units sold by the Nema companies during the similar period in 1934.

In the sales-by-states tabulation of shipments to dealers and distributors New York state was far in the lead, with California second, not far ahead of Pennsylvania. Illinois, an early season leader in the geographical distribution of the agency, stated last week.

(Concluded on Page 8, Column 3)

Geyer Detroit Office
Headed by Woodcox

DETROIT—Vance C. Woodcox, formerly director of advertising and sales promotion for Kelvinator Corp., and more recently manager of the appliance department of Montgomery Ward & Co., will head the Detroit office now being established by Geyer, Cornell & Newell, Inc., New York City, to handle the Kelvinator account, H. W. Newell, vice president of the agency, stated last week.

In making the announcement, Mr. Newell said that by obtaining the services of Mr. Woodcox, the agency now has virtually completed its program for handling the Kelvinator advertising campaign. The office is expected to be in its permanent location within the next week or two, Mr. Newell said.

Starr Receives Order for
Nomis Conditioners

RICHMOND, Ind.—The Starr Co. of this city has received a large order for self-contained air-conditioning cabinets and units, production to start immediately and to cover several models, from the Nomis Oil Burner Corp. of Lafayette, Ind., reports Fred Gennett of the refrigeration division of the Starr Co.

The air-conditioning equipment is being manufactured under the patents of Russell T. Smith, who is acting as designing engineer for the Nomis Oil Burner Corp.

Payments are scaled as low as \$4.63 per month on the machine, and the purchaser may have three years in which to pay for it, if desired. Regular service and guarantee offers hold, despite the special price.

The model offered has 14.5 sq. ft. of shelf area, four single and one double depth ice cube trays, and will make 126 cubes at a freezing. Interior finish is of porcelain, and exterior of lacquer.

A refrigerator of the same size, with porcelain exterior, is available, on the same terms, at a cost of \$20 additional.

Initial public reaction to the store's offer has been favorable, though not enough time has passed since the first announcement to indicate its ultimate results, store managers claim.

Advertising, Hostess Programs, Booklets & Special Financing Used in No. Calif. Drive

(Concluded from Page 1, Column 4)
an electric refrigerator, were furnished in mat form, without cost.

Display cards, carrying the Society's slogan, "An electric refrigerator costs you nothing. It pays for itself," were furnished free of charge to dealers selling the makes of refrigerators included in the campaign plan. The cards were useable as floor or window pieces, and were 20x30 in. in size, with easel back.

55 Hostess Programs

Through the cooperation of Pacific Gas & Electric Co., hostess programs were conducted in 55 of the company's offices during the period of the campaign. This project alone, it was estimated, reached a total of 250,000 people during May as they visited their local utility offices to pay bills and secure other services.

Programs varied from three to 22 days in length, depending on the size of the locality. Hostesses, who were trained home economists, prepared different kinds of ice cream, frozen desserts, and salads, and served them to the customers who visited the utility's offices during that period.

Booklet Gives Recipes

In addition, the Society prepared a booklet on "What Every Woman Wants to Know About an Electric Refrigerator," which was distributed free at the hostess programs. The booklet contained recipes for the frozen desserts served at the hostess programs, as well as for other frozen ice cream dishes.

It also outlined the savings which an electric refrigerator made possible, and helpful suggestions as to the proper use of a refrigerator, including the correct method of defrosting, and the care and arrangement of food inside the box.

Distributors Are Listed

On the front cover of the booklet were listed the names of the refrigerators whose distributors sponsored the campaign, and the back cover carried a replica of the Society's general newspaper advertisement.

Pacific Gas & Electric Co. also made its showrooms in 63 cities available for dealers for cooperative floor and window displays during the period of the campaign.

Displays were provided by local dealers, and no make, even though it was participating in the campaign, was admitted unless it was stocked by a local firm. Where more than one dealer in a community handled a line of refrigerators, one model of that make was shown, together with the names of the various dealers who sold it.

Field Men Help Dealers

Only requirement made in addition to that by the utility was that the refrigerators displayed must be between 6 and 8 cu. ft. capacity. Exhibits were set up around April 25, and most of them remained on the utility's floors until June 15.

Dealers were aided in their local plans for cooperation in the campaign by the Society's two field men, who visited all towns in the territory to help with the store's local promotion,

and educate salespeople on electric refrigeration, with particular reference to the line which the store handled.

One of the major factors in the campaign's success, reports H. M. Crawford, general sales manager of Pacific Gas & Electric, was the dealer FHA financing plan which the utility instituted in cooperation with two large branch banking systems operating in Northern California, America Trust Co., and Bank of America, N. T. & S. A.

FHA Plan Helped Too

This arrangement, together with the liberalization of the loan provisions of the FHA's plan, permitting tenants as well as owners to obtain loans, did a great deal to promote many sales that might otherwise have been delayed, Mr. Crawford says. Easing of the rules regarding "permanent" connection of electrical appliances bought under FHA terms was another sales-boosting factor.

Under the arrangement between P. G. & E. and the branch banking systems, any person in the utility's territory could obtain a loan for the purchase of an electric refrigerator or other appliance, providing his credit standing was good, and his annual income sufficient to meet the payments specified in the note. Otherwise, the regular FHA loan regulations held.

Grocer-Dealer Shows How Refrigeration Cuts Food Costs

ARNOLD, Pa.—Demonstrating, via window display, that buying a refrigerator saves on canned goods, and that buying canned goods helps pay for a refrigerator, has enabled W. H. Gott Co., combination Westinghouse dealer and grocery store here, to increase its business in both departments.

By figuring that when a customer buys a No. 2½ size of average canned goods he saves nearly 40 per cent, Mr. Gott calculated that an electric refrigerator would save \$100 per year on quantity buying alone.

Carrying these calculations further, he figured that quantity buying, economic savings—plus leftover, bargain buying, and operation economies—amounted to enough to pay for a Westinghouse refrigerator in two years time and continue to pay back the owner from \$100 to \$125 per year afterward.

He dramatized this idea in a window display and sold both refrigerators and canned goods. The window was filled with a refrigerator and a year's savings in food. Theme of the display was "I've found the way to fight higher food costs." A large display sign read "A Westinghouse refrigerator gives you \$100 worth of groceries free every year; come in and see us about it."

During the first month of the Westinghouse "Call to Colors" campaign, the Gott company's sales averaged 13 per week, putting its yearly quota over the 100 per cent mark.

Comfort, Beauty & Effective Lighting in New Showroom



Products, prospects, and salesmen enjoy the advantages of modernistic surroundings and effective lighting in the new showrooms of E. A. Wildermuth, Kelvinator distributor for the metropolitan New York City area. About 10 minutes after this picture was taken the prospect seated in the left foreground signed an order.

'Home Demonstrations' and Other Plans Make Sheboygan Drive a Success

(Concluded from Page 1, Column 3)

Arthur Scaife, advertising and promotion manager of the refrigerator division of General Electric Co.; H. B. ("Hib") Dahl, divisional sales manager of Kelvinator Corp., Chicago; Henry C. Bonfig, vice president and general sales manager of General Household Utilities Corp., Chicago; and Ralph Wiengartner of the executive staff, Frigidaire Corp., Dayton.

The merchandise credit certificates entitled the holder to \$10 credit on a 4-cu. ft. box at any dealer during the period Aug. 1 to 10. Making use of the weapon, 100 refrigerators were sold the first week. The second phase of the campaign was the cold cooking school, held Aug. 13, 14, and 15, at night, to escape summer heat. An attendance of close to 4,000 was secured for the demonstrations, with Miss Clara Dean, home economist from General Electric's House of Magic, in charge.

For the home demonstration plan, salesmen were instructed to keep at least two chest refrigerators on demonstration continuously. Each demonstration was limited to four days, with the boxes "jerked" if a sale was not made at the end of that time. Prospect lists were made up by the Wisconsin Power & Light Co. from customers who used less than 30 kwh. a month and who kept their electric service bills paid up. Salesmen drew lists of 30 prospects from a hat.

Advertising done in the campaign,

besides newspaper space, included spot announcements, a direct-mail attack by individual dealers, posters and truck banners, window displays, movie trailers, theater lobby displays, the merchandise credit certificates, and the cold cooking school.

Frank W. Greusel of Maurer-Greusel Co., Milwaukee, Grunow distributor, was chairman of the executive committee, assisted by George Resch, Sheboygan Appliance Co., secretary; W. J. Prange of Prange-Guesenhauer Hardware Co.; G. W. Fedler of Rickmeier-Fedler Electric Co.; Robert F. Timm, national advertising manager of the Sheboygan Press; and L. L. Perry, Sheboygan merchandising manager of Wisconsin Power & Light Co.

Gordon Fairfield of Morley-Murphy Co., Milwaukee distributor, headed the general promotion committee, assisted by R. A. Smith of Frigidaire Corp., Oshkosh; H. J. Knott of Lappin Electric Co., Milwaukee; M. D. Weinberg of Maurer-Greusel Co., Milwaukee; N. E. Harvey, Westinghouse Electric Supply Co., Milwaukee; and Edward C. Zabors of E. H. Schaefer Co., Milwaukee.

The advertising promotion committee included Sid Cobabe of Klau-Van Pietersom-Dunlap Associates, Inc.; Mr. Timm; and E. H. Schaefer of the E. H. Schaefer Co.

G-E Increases Dividend On Common Stock

NEW YORK CITY—A quarterly dividend of 20 cents a share on the common stock, 5 cents higher than last quarter, was declared by directors of General Electric Co. at their meeting here last week. The dividend is payable Oct. 25 to stockholders on record Sept. 27.

New G-E director, elected at the meeting, is Leon Fraser, vice president of the First National Bank of New York and formerly president of the Bank for International Settlements.

Mr. Fraser was legal adviser to the American delegation at the London Prime Ministers conference in 1924, was general counsel for the Dawes Plan, Paris representative of the agent for general reparation payments from 1924 to 1927, and attended the conference of financial experts which drafted the Young reparations plan in 1929.

Wisconsin Association Plans Fete this Week

MILWAUKEE—Members of the Wisconsin Radio, Refrigeration, and Appliance Association will play in their annual fall golf tournament and dinner tomorrow (Sept. 12) at Merrill Hills Country Club, near Waukesha, Wis.

Committee in charge of the affair is headed by Frank W. Greusel, president. Other members are Gordon Ische, Peter Wirtz, William Seemuth, E. H. Schaefer, Gustave Marx, Arch Strong, Michael Ert, Walter Johnson, Chester Morris, William Wisniewski, William Baker, and Carl Hayssen.

10,429 Appliances Sold In Ga. Power 'Circus'

ATLANTA—Topping all previous single sales campaign records, salesmen of the Georgia Power Co. here sold a total of 10,429 major appliances, or 132 per cent of quota, during its recent "Sales Circus" campaign.

Appliance units sold included 6,152 refrigerators, 894 commercial units, 181 water coolers, 2,105 ranges, and 1,097 water heaters.

Rome division, with T. S. Sloan as division manager and F. J. Dodd as division sales supervisor, won first place with 149.9 per cent of quota. Outstanding individual salesman in the campaign was John Henderson of the Decatur store in Atlanta, with 422.2 per cent of quota.

Winners of free trips to Bermuda were: T. S. Sloan, F. J. Dodd, and J. R. Holt, all of Rome; J. R. Vansant, Statesboro; E. E. Mack, L. L. Peters, and F. E. Chambers, all of Columbus; F. W. Collins, Macon; J. J. McDonough, Augusta; H. L. Hendon and M. L. Tomlin, Athens; I. H. Morehead, Jr., M. J. Wilson, John Henderson, H. C. Traylor, and D. H. Tadlock, all of Atlanta; C. P. Wicker, C. M. Robertson, and H. E. Hendon, all of Carrollton; J. A. Garner and C. E. Nash, Jonesboro; and H. L. Robertson, Wadley.

Following the first-place Rome division, the other five divisions finished with the following percentages: Columbus, 148.5; Augusta, 142.5; Macon, 125.3; Athens, 125.2; and Atlanta, 121.5. Leading class "A" store was Main Store, Atlanta, with 147.7 per cent; top class "B" district was Columbus, with 139 per cent; winner of class "C" district was Carrollton, with 176.3 per cent; leading class "D" district was Jonesboro, with 201.2 per cent; and top local office was Wadley, with 369.2 per cent.

CURTIS REFRIGERATION

Units to fit every need

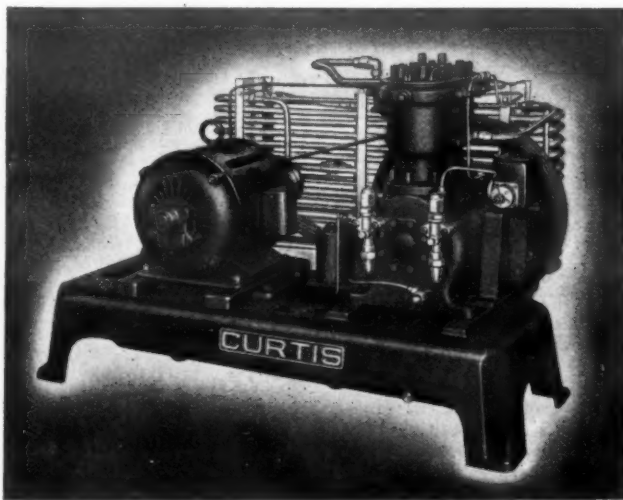
Curtis, one of the oldest compressor manufacturers, offers an unusually complete line of refrigerating units— $\frac{1}{2}$ to 2 H. P. air cooled; $\frac{1}{2}$ to 15 H. P. water cooled—reflecting 81 years of successful engineering, designing and manufacturing experience. Some desirable territories are still open for reliable distributors.

81
SUCCESSFUL
YEARS
ESTABLISHED
1854

Write
for
details.

CURTIS

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 Kienlen Avenue, St. Louis, U. S. A.



BARE AND COMPLETE COMPRESSORS FOR SERVICE MEN

REPUTATION and PROFIT BUILDERS.

Write for our Special Plans and learn how you can enjoy "M&E" prestige and proven quality in your private label work.

CATALOGS, DATA SHEETS, on Request



MERCHANT & EVANS CO.
MANUFACTURERS
PHILADELPHIA
EST. 1866—Plant: LANCASTER, PA.

Use of Appliances Abroad on Upgrade Says R. L. Gifford

By George F. Taubeneck

DETROIT—Take it from R. L. Gifford, export manager of the Norge division, Borg-Warner Corp., and president of Borg-Warner International Corp., the good ol' U.S.A. needn't be so high hat about its advancement in the use of electrical home servants. Some foreign nations can show us a thing or two, opines Mr. Gifford, who has just returned from a trip across the Atlantic (which included a lengthy sojourn in South Africa).

Sample: electric teakettles. Now when you stop to think about it, you do wonder why somebody in this country hasn't thought of electrifying that most useful of kitchen utensils. Mr. Gifford says that over in England the electrically heated teakettle is a commonplace.

Being the great nation of tea-drinkers, Britishers appreciate a device which will boil their tea water in three minutes, and which doesn't require the uneconomical procedure of turning on the heat in a big range or stove just to get a little hot water.

England is quite thoroughly refrigeration-minded now, too, Mr. Gifford will tell you. This year close to 70,000 household refrigerators probably will be installed in the relatively small area which comprises the British Isles.

Next year even the most conservative of the naturally conservative English market analysts admit that this figure may be upped by more than 50 per cent. Although a few years behind, the English refrigeration sales curve seems to be following the same sharply rising curve as that registered by the United States.

English manufacturers, such as the local edition of Electrolux, get most of the business. Norge refrigerators are made over there by Electric and Musical Industries, and sold, incongruously enough, under the "H.M.V." (His Master's Voice) trademark. (To this reporter, that sounds almost as odd as "Hotpoint" refrigerators).

Refrigeration is also "hot" just now in another sphere of British influence—South Africa. Down in the country where diamonds-in-the-rough and gold-from-the-deep are wrested from the ground, household and commercial refrigeration and air conditioning are greatly in demand.

This business is nearly all import, too, and United States manufacturers get a lion's share (the figure of speech holds even if the lion is an African beast and a British symbol) of it.

Great future markets for American-made refrigeration and air-conditioning equipment exist in such lands as Australia, India, the Balkans, Russia, and the Scandinavian peninsula, he believes.

On the continent of Europe lengthy strides are being taken in the art of making kitchen appliances more convenient, this Borg-Warner official observes.

He does say that in the matter of appearance and style, as well as in performance, American-made appliances have the edge. Even so, we shouldn't consider our neighbors across the sea as "backward races" when it comes to the utilization of electricity.

Mr. Gifford feels that world trade is in an encouraging state of recuperation from the depression, and says that the export market for home appliances holds forth promise of exceptional opportunities for American manufacturers in the very near future.

J. L. Hudson Opens Fall Home Bureau Sessions

DETROIT—The Home Advisory Service Bureau of J. L. Hudson Co. department store will open its series of fall and winter cookery schools under the direction of Miss Jessica Meek with an informal tea today.

Home economists in charge of the September sessions are Mrs. Raymo, Salada Tea Co.; Mrs. Wright, Simple Simon Pastry Co.; Miss Irene Hickey, Detroit City Gas Co.; and Mrs. Lois Baker, Caswell, Inc., General Electric Michigan distributor.

Mrs. Raymo and Mrs. Wright will conduct the opening sessions on Sept. 11 and 12. Miss Hickey will demonstrate "Modern Canning Secrets" and "Oven Canned Delicacies" on Sept. 18 and 19. "Cooking the Way He Likes It" and "The Maid's Day Out" will be discussed by Mrs. Baker at the Sept. 25 and 26 sessions.

Westinghouse Adds Miss McEwen to Range Staff

EAST PITTSBURGH—Miss Hannah E. McEwen, formerly assistant in the home economics department of Ohio State University, has been appointed to the staff of range home economists for Westinghouse Electric & Mfg. Co.



Wet Insulation in Refrigerator Walls Can INCREASE Running Costs 30c to \$2 a Month

No matter how well built a refrigerator cabinet might be, you wouldn't expect to keep a vacuum in the walls for any length of time. You would expect air to get in sooner or later. In the air is a gas made up of water vapor. It is twice as thin as air itself. Since air is bound to get into the cabinet wall, water vapor even more easily gets in. So, in spite of all precautions, moisture collects between the walls.

With better cabinet construction, the entry of moisture is made more difficult, but with cheap construction a great deal of water collects within the walls. If the insulation is "hygroscopic," that is, gradually absorptive, practically all the moisture soaks into the insulation, reducing its efficiency to almost nothing. But with Dry-Zero Insulation, which does not absorb moisture, there is practically no loss of efficiency because it does not get wet.

Here are the results of impartial tests made on three nationally known "high class" refrigerators having poorly made shells. First, with the insulation used in production; next, with Dry-Zero Insulation:

End of Test	Cabinet insulated with cheap "hygroscopic" insulation. Regular Production	Cabinet re-insulated with Dry-Zero
Free water in bottom of shell.....	1.7 lbs.	23.1 lbs.
Soaked into insulation.....	28.9 lbs.	0.0 lbs.
In "moisture-proof" wrapping.....	1.8 lbs.	1.1 lbs.
Total water within walls.....	32.4 lbs.	24.1 lbs.
Increased cost of operation.....	82%	7%

Here are the results of another series of tests on two equally prominent makes having well-made shells. First, with the same cheap insulation used in the above test; next, with Dry-Zero used in regular production:

End of Test	Cabinet re-insulated with cheap "hygroscopic" insulation	Cabinet insulated with Dry-Zero Regular Production
Free water in bottom of shell.....	0 ozs.	0 ozs.
Soaked into insulation.....	42 ozs.	0 ozs.
In "moisture-proof" wrapping.....	6 ozs.	5 ozs.
Total water within walls.....	48 ozs.	5 ozs.
Increased cost of operation.....	47%	0%

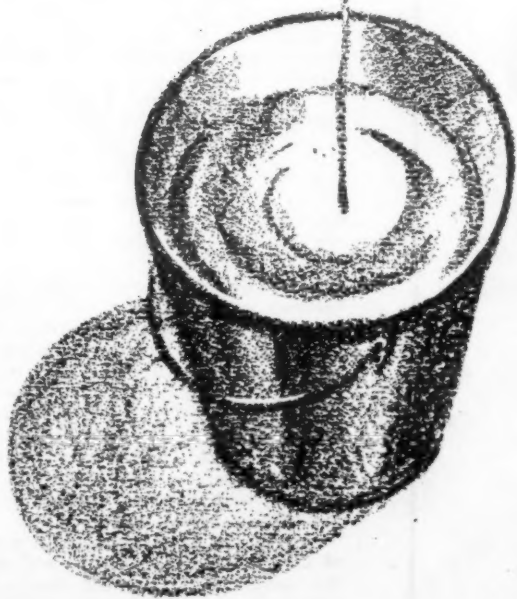
Equivalent Periods in Use

The conditions of these tests correspond to the normal use of refrigerators for:

3 years in St. Louis
4 years in New York
2½ years in Atlanta
4½ years in Chicago

If you are selling refrigerators insulated with Dry-Zero, you are giving to your customer a definite value that will help you close sales if you will use this insulation story. Dry-Zero Insulation can save from 30c to \$2 a month in running costs. It gives full and dependable insulation for the life of the refrigerator.

Dry-Zero Corporation, Merchandise Mart, Chicago, Illinois. Canadian office: 687 Broadview Ave., Toronto, Ontario.



DRY-ZERO
REG. U.S. PAT. OFF.
THE MOST EFFICIENT
COMMERCIAL INSULANT KNOWN

BOOKS FOR SALESMEN

'Closing the Sale' Outlines Direct Methods Of Getting Orders & Answers Arguments By Prospects Who Want to 'Wait'

The difference between a good salesman and a poor one is the ability of the first to get an order instead of a promise.

Sales managers—and salesmen themselves—have realized this for a long time. So, the better to sell their wares, they have piled theory upon theory—until they fairly lost themselves in a maze of their own creation.

As a result many salesmen, especially those new to the business, hold weird and fanciful ideas about an exceedingly practical operation. These misconceptions magnify in the salesman's mind the difficulties of closing—and he approaches that part of his work in fear and trembling.

Presents Plans for Closing

What happens? Instead of completing a sale in one call, they take the time for three or four. Hours are spent in getting an order which might be had in a few minutes. Sales costs go up, 'way beyond reason—and sales managers puzzle.

In "Closing the Sale,"* J. C. Aspley wades into the welter of theories, tears them apart, and comes up with a set of time-tested plans, concisely written, and easily understood.

One of the most common causes of deferred orders is the attitude which salesmen hold toward their jobs, Mr. Aspley says. Too many of them think

*Publisher: Dartnell Corp., Chicago. Pages: 125. Price: \$1.

that if they keep calling on prospects for friendly visits, orders will result.

Orders are the result of direct and careful planning. The best salesmen plot out their day's work in advance. They know how much they want to accomplish—because, in most cases, they've given the prospect's problems a good deal of thought before they approach him. They've worked out a campaign—and their enthusiasm over it is infectious. The prospect can't help but get some of it.

'High Pressure' Loses Sales

Another cause of put-off orders, the author says, is a mistaken idea on the part of salesmen that their job is to hedge the prospect in so that he hasn't an "out"—the only way out for him is to buy. This belief, an outgrowth of the "one call" high-pressure sales school, causes the buyer to feel he is being trapped—and loses more sales than it will ever gain.

The successful salesman has the knack of keeping always on the mental level of the man he is selling. He keeps the sales rudder at all times in his own hands, and steers the interview down the course to the signed order.

Sale Will Close Itself

Don't feel that there is anything especially difficult about closing a sale, Mr. Aspley counsels beginners. Try to think of it as the natural result of a well-planned and ably executed canvass. In almost every case a sale,

if properly carried to the closing point, will close itself.

Confidence, says the author, is half the sale. So long as a salesman is content to hope that he'll get an order from the man he's about to interview, he's likely to keep right on hoping, and nothing more. The man who knows he's going to get the order, gets it.

Time after time, men have gone out on what seemed like hopeless errands, and come back with the order—for no other reason in the world except an undeniable determination to have it. Call it what you will, there is no denying, says Mr. Aspley, that the man who comes to you with his mind made up as to just what he wants, why he wants it, and how he is going to get it, usually gets it.

Keep on the Track

Another pointer—keep on the main track. Concentrate on the one big objective—getting the order. Drop all conflicting thoughts, and fasten your attention on doing the job at hand. Do it well—and watch your sales totals mount. Talk from the prospect to your proposition, instead of the other way around.

And still another pointer—avoid anything during the interview that will cause the buyer to feel that you are doing his thinking for him. Let the whole fabric of the sales talk be built on indirect suggestions of a positive nature.

Get the man you are selling away from outside interruption, if you possibly can. Many a sale has been lost, just as it was being closed, by the ringing of a telephone, or the interruption of a clerk.

The less there is for the prospect to look at, or play with, or wonder about, the more attention he is going to give to the salesman, says Mr. Aspley.

Do Not Force Conclusions

A skillful salesman is careful not to force his conclusions on the buyer.

His best move is to take the attitude that he is there, not to make the man he is selling do something he doesn't want to do, but merely to help him decide. No customer likes to have a salesman prove that he is a better man mentally, any more than to have him prove that he is a better man, physically.

A stratagem used successfully by a great many salesmen is to get the prospect into an agreeable frame of mind as soon as possible, and then lead him from one agreement to another, until he has the habit. Then, when asked to give the order, he is just that much more apt to do so. This is called the "yes" method of closing.

Make Backward Steps Hard

Whatever method is used, however, there is one cardinal principle—make it harder for the prospect to go backward and turn you down than it is to go forward and order. But this must not be carried too far. All the strategy in the world won't take the place of facts, the author emphasizes.

A great many salesmen make the mistake of trying for a close with a bunch of photographs, sheets of statistics, and advertising literature laid out before the prospect. There are circumstances where this is necessary—but whenever possible, avoid it, Mr. Aspley advises. It lets the prospect's mind wander, and closing the sale is just that much harder.

Write the Facts Down

Carry your facts and statistics in your head—and write them down as you go along. This is an old trick—but a winner as an attention-getter. Instead of letting his eyes wander around the room, the prospect watches you, and your pencil.

Another thing successful salesmen must learn, before they can become successful, is when to close. A lot has been written about the "psychological moment," when the salesman is supposed to "sit down" on the order.

Here's what Mr. Aspley says, in effect:

Be ready to close, not only at the end of the demonstration, or the presentation—but any time during the interview that the prospect indicates he is ready to buy. If you succeed in closing him earlier than you planned, you can still tell him all the things he ought to know, after the order has been signed.

Try for Order Four Times

A good rule to follow, says the author, is this: never leave a man's presence without trying four times for an order. That simple thing alone, he declares, will make a salesman absolutely sure of more orders.

If the sale has been properly planned, and conducted according to that plan, the close will come as a natural climax to the sequence of thought through which the salesman has taken the prospect. But if something has slipped up somewhere along the route, the salesman is apt to find himself "all dressed up and nowhere to go," as far as the close is concerned.

If Order Isn't Given, Then—

To meet this situation, three things should be done, Mr. Aspley says: First, summarize the strongest points in the interview—emphasizing those which you think have impressed the prospect most. Second, put the prospect in a position where it's hard for him to go back, but easy to go ahead. Third, when he's in that position, give him the final push.

While too much dependence should not be placed on "closing stunts," every salesman should have four or five "closers" that he can bring into play when needed. But the salesman mustn't make the mistake of being too intense. Poise counts, almost as much as what the salesman says.

In nearly every case where a salesman is turned down flat, and in a way in which it is difficult for him to recover himself, it will be found that he has been using negative tactics instead of affirmative ones.

Don't Debate or Argue

Above all, counsels Mr. Aspley, don't ask questions which can be answered by "No," don't debate; don't argue. And don't talk too much, or too fast.

A mistake commonly made, by even veteran salesmen, is to wait too long before producing the order blank. Many prospects are "order-book shy."

Get around this by putting the order book in plain sight early in the interview. Thus, the prospect becomes used to the sight of it—and shyness is avoided. Smart use of the order book can be a big help in closing; and improper use of it works just the opposite way.

One of the most successful methods of closing the sale is the "writing out the order" one. In this method, the salesman asks the prospect leading questions, and keeps his attention while he gathers information essential to the order. At the end, he merely hands the order book to the prospect for signing.

Keep Prospect Busy

Much of the success of this plan, says Mr. Aspley, depends on being able to keep the prospect's mind actively employed. If this isn't done,

the prospect may be able to frame an excellent excuse for not buying at the moment.

"Get the order—then get out!" has long been a theory of salesmen. Mr. Aspley agrees, in part, with this viewpoint—but, he insists, thousands of orders are cancelled, every year, because the salesman who took the order did not nail it down before leaving the buyer.

In other words, if there are any strings tied to the proposition—in the shape of extras that come along after the sale is closed—the buyer must be prepared for them. This is just as important as getting the actual order itself. A cancelled order is the same as no order whatever.

'Leave More Than You Take'

"Leave more than you take away," Mr. Aspley advises. In other words, don't be content with just selling whatever you have to sell. Give the buyer a couple of ideas how to make use of it—how to save money with it.

Good salesmen make a point of sitting down with the buyer, after the order is signed, and going over its uses again, as well as explaining to the buyer exactly what he has agreed to do—so that there will be no misunderstandings, and, consequently, no cancellations.

Last two chapters of the book are devoted to the legal phases of the order, and the care with which it should be written. Too flamboyant promises, and false statements, are both sufficient to invalidate the sales contract. And many a sale has been lost, by the salesman's carelessness in writing it up, or in other details to which salesmen, in their hurry to "get the order and get out," give insufficient care and attention.

Arguments Against Waiting

Probably the most practical feature of the volume is an eight-page appendix, in which the author has listed arguments for overcoming that age-old bugaboo to successful closing, the desire to defer buying.

Procrastination, says the old proverb, is the thief of time. Salesmen have found it likewise a thief of orders.

Prospects invent ingenious, sometimes fantastic, excuses to delay putting their signature to an order, even after they have become thoroughly convinced of the merits of the salesman's argument. This beating-about-the-bush attitude is a major stumbling block to many sales.

In the field of specialty selling, however, the science of closing the sale has attained a high state of development. From this field the author has selected proven methods of meeting the following chronic objections:

"Wants to look around some more:" Explain to the prospect, if he is a married man, that he didn't ask his prospective wife to "wait until he looked over some more girls."

"Afraid to decide:" Show that the thing you are selling is a necessity, as proven by its acceptance by other business men.

'Can't Decide Now'

"Can't decide—will phone later:" Have the prospect sign the order, and arrange to phone him sometime the next day to let him make his final decision. The move here is to keep control of the action.

"Hard up:" Show the prospect that he won't have any more money a month from now than he has today; that he is putting his money back into the business, anyway; that what you have to sell is an investment.

"The put-off by flattery:" This person calls your sales talk the best he has ever heard, says he's sold, but wants to wait a while. Shrug off the compliment, and explain that you're trying to save him money, not to sell him something he doesn't need. This type of "stall" is hard to get around.

"Wait until business picks up:" Explain that what you have to offer the prospect will help his business improve faster.

Other Excuses for Delaying

"Will submit to directors:" Usually this person has the authority to buy whatever you're selling. Convince him it is to his own advantage and prestige to do so at once.

"The second-hand 'stall':" Show him that no second-hand article will do the work as well or as economically as a new one will.

"Want to talk it over with a friend:" Get the friend on the phone at once. If this cannot be done, show the prospect that, whatever his friend may think, the many satisfied users of your product attest its worth.

"Want to talk it over with the wife:" Arrange to have prospect bring in wife for a demonstration. Otherwise, convince man he is doing wife a favor by taking responsibility of selection off of her shoulders.

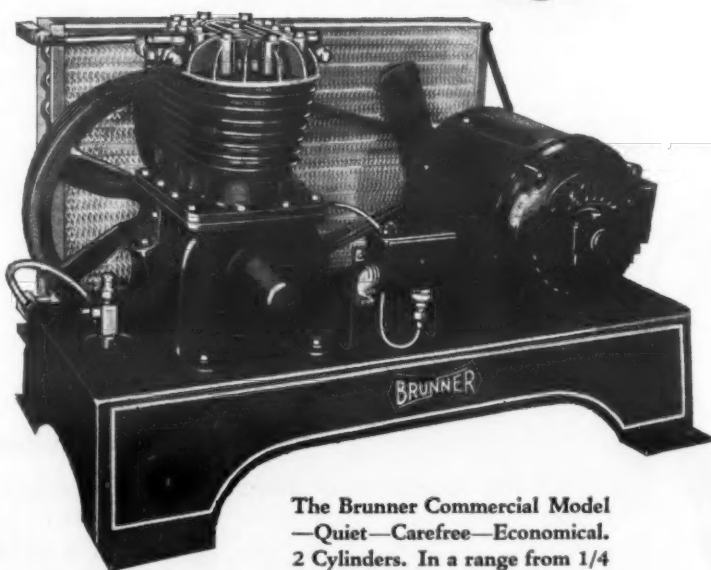
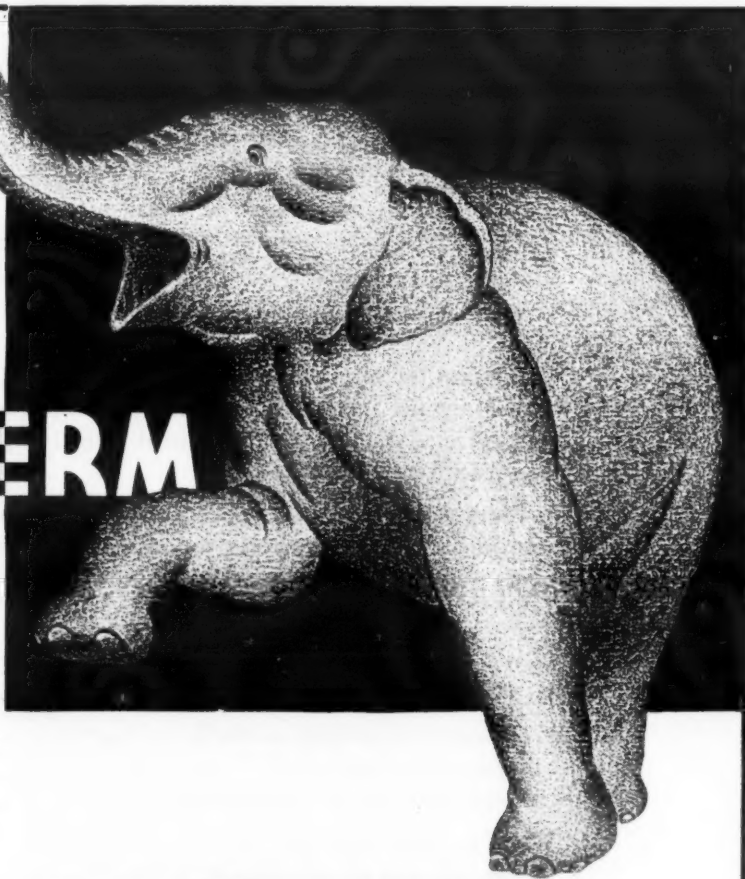
LARKIN COILS
for...
AIR CONDITIONING

Like a POWERFUL PACHYDERM

● WHEN you run into a combination of heavy duty requirements that are too much for ordinary constructions—depend on Brunner Refrigeration Units. In their special realm they are, indeed, like "powerful pachyderms"... both in span of endurance and strength to out-perform.

Brunner's 1935 Compressors and High-sides are the outgrowth of a 29 year tradition of quality, craftsmanship and engineering foresight. Check over the Brunner Model best suited to your requirements. Note how sturdy it is built, how smoothly it runs, how completely it reflects Brunner dependability.

There's a Brunner for every refrigeration need—eight models of compressors, 41 models of high-sides, from 1/6 H. P. to 15 H. P. Send for your copy of the new Brunner catalog. It's free. Brunner Manufacturing Company, Utica, New York, U. S. A.



The Brunner Commercial Model—Quiet—Carefree—Economical. 2 Cylinders. In a range from 1/4 H. P. to 2 H. P.

Brunner

A NAME BUILT BY 29 YEARS OF SERVICE

Detroit Apartment to Be Equipped with 360 Copeland Units

DETROIT—What is said to be the largest single order for household electric refrigerators signed in this city in several years has been placed with Republic Refrigerator Co., Copeland dealer, by the management of Alden Park Manor, Detroit's largest apartment building.

The order calls for the installation of more than 300 Copelands of various sizes, of the regular self-contained type, to replace an ammonia multiple refrigeration system which had been in use in the apartment building previous to this time.

More than 100 of the refrigerators have already been installed, and more are going into operation as fast as arrangements can be made for their installation.

Republic Refrigerator Co. is under the W. C. DuComb Co. distributorship.

Westinghouse Attacks 'Winter Housekeeping Blues' in Advertising

MANSFIELD—Westinghouse bids "Goodbye to Winter Housekeeping Blues!" in the first promotional piece of its fall and winter refrigeration sales drive. Copies of the poster are now being distributed among Westinghouse dealers.

The poster is a blown-up reprint of the advertisement which is appearing in the *Saturday Evening Post* issue of Sept. 14.

It shows a housewife standing in front of her Westinghouse and smilingly bidding goodbye to such winter food-keeping worries as chilly visits to the back porch, daily marketing trips in bad weather, food losses from freezing, tiresome trips to the cellar, and risk and expense of spoilage.

Copy paints a drab winter scene of annoyance and expense without the services of an electric refrigerator, and points out the uncertainty of relying on the weather for proper refrigeration. Only 19 days in the year, it is emphasized, can be relied on for temperatures between 32° and 50° F., low and high "danger points" for food preservation.

Savings effected by quantity buying are stressed, and the reader is urged to buy his Westinghouse immediately, "to obtain months of extra savings."

21 New General Electric Homes Near Completion in New York City Area

LONG ISLAND CITY, N. Y.—Twenty-one homes are nearing completion in the metropolitan area here in connection with the General Electric "New American" Home Building Program, reports Rex Cole, New York chairman of the activity. On Oct. 1, 300 of these homes throughout the United States will be opened for public inspection.

Among the conveniences which the homes in the New York territory will feature are complete electric kitchens, including refrigerators, ranges, dishwashers, exhaust fans, and modern lighting. Electric oil furnaces, supplemented in some cases by winter and summer air conditioning, will be used in most of the homes. Others will offer laundries with electric washers and ironers.

Six of the 21 homes are in Westchester County and represent a variety of design and exterior and a wide range in price. The smallest and least expensive "New American" home is in Queens County. It includes an electric oil furnace and complete electric kitchen. The home is in the English manner, of brick veneer with four and one-half rooms.

Others on the New York district committee besides Mr. Cole are: E. H. Campbell, vice chairman, Rex Cole, Inc.; Q. D. Baldwin, General Electric Contracts Corp.; R. J. F. Cullen, General Electric Supply Corp.; Mrs. Hoyt Flanders; Leo Hammerstein, Phillips & Ibsen; F. S. Hartman, W. E. Hurley, J. F. Quinlan, and W. A. Scherff, all of the General Electric Co.; Clarence L. Law, New York Edison Co.; John J. Massimi, Rex Cole, Inc.; Ralph J. Mowry of Alfred L. Hart; M. E. Pipkin, Rex Cole, Inc.; T. F. Ryan, Gene Meenan, Inc.; C. M. Scherwin, president of Scherwin Air Conditioning Corp.; and George Sutton, Strain & Sutton.

Turner Awarded Prize as Star Crosley Salesman

SPRINGFIELD, Ill.—Leaders in sales of Crosley Shelvador electric refrigerators in this territory have been awarded prizes by A. Turner, president and general manager, Central Auto Equipment Co., Crosley distributor here. W. B. Turner, winner of first prize, received \$10 in cash and a Crosley diamond-set 100 Per Center pin. Jim Martin won second prize, and Fred Aitchison, third.

Sears, Roebuck Will Market Pre-Fabricated Homes Priced at \$2,900 to \$4,200

CHICAGO—Sears, Roebuck & Co. is planning to put on the market completely pre-fabricated steel and wood homes, with winter air conditioning, which can be erected in approximately two weeks, and which range in price from \$2,900 to \$4,200, plus the price of a lot. First of the homes will be ready for inspection sometime in October.

Quoted prices include complete electrical wiring and fixtures, piping and plumbing, built-in apron bath tub, lavatory, toilet, kitchen sink, steel kitchen cabinets, automatic hot water, and a winter air-conditioning system—which provides automatic oil-fired heating, complete with filtering, humidifying, and forced air circulation through a duct system.

Designed by General Houses, Inc., Chicago firm, the first factory-made homes to be offered by Sears will be of entirely new arrangement. About 30 four-to-six-room plans will be available by the time the first home is opened to the public. Later on

more plans, including two-story homes, will be listed.

With the exception of the ingredients of the foundation—cement, sand, and gravel—Sears will supply every inch and ounce of materials and equipment used in constructing the house.

Standardization of parts, providing the same basic structural units for all sizes and types of homes, will make erecting of the building an assembly process, Superintendent L. R. Walker of Sears' division of home construction declares.

Capital Electric Co. Moves To New Location

ATLANTA—Capital Electric Corp., Stewart-Warner distributor here, held open house at its new home, 415 Peachtree St. here recently. The firm was formerly located at 393 Peachtree St.

Sales Contests & How to Run Them

NO. 6—SALESMEN FORCED TO SIGN "I MADE IT" OR "I FAILED" QUOTA CARDS AT END OF MONTH

By John Kumler

Under this plan it is a cold "Yes" or "No."

Clint Sears, resourceful advertising manager of White Star Refining Co., gave us this one. Seems it was used successfully by Detroit Steel Products.

They had two cards made up and sent the pair on the 20th day of each month to all of their salesmen who were on monthly quotas.

The cards were large—about 5x9 in. One was printed in red with a red border and read, in large letters "I MADE IT!" with the place for a name and date to be signed.

The companion card was printed in black with a black (funeral border) and read, in large letters "I FAILED!" with a place to sign a name and date.

Under penalty of censor from the president of the company, every salesman had to sign and mail in the

correct card on the last day of the month.

'Tis said that the last week of the month got a lot of extra effort out of those men on the short side. No man with self-respect likes to admit his failures—especially on a card he knew the "brass hats" were going to look at twice.

A variation of this idea is to give every salesman a pair of pencils—red and blue. They sign all orders with red until they "get out of the red" (by making quota), and from then on use the blue pencil.

Miss Snavelly Joins Cole

LONG ISLAND CITY, N. Y.—Miss Nell M. Snavelly, formerly with R. Cooper, Jr., Inc., General Electric Chicago distributor, is now home service director for Rex Cole, Inc.

Are you making the most of this ammunition in developing "FREON" air-conditioning prospects?

WRITE THE SPECIFICATIONS FOR AIR-CONDITIONING EQUIPMENT AROUND "FREON" the ultra-safe and efficient refrigerant

FOR many months now, architects, building owners and engineers, executives in the restaurant, hotel, railroad, department store, and many other fields, have been told regularly about the benefits of "Freon" air-conditioning, right in their own familiar "trade magazines."

Have you been cashing in on this valuable sales assistance? Are you calling on all the many prospects in your territory whom this advertising is helping to develop? Many salesmen have found it helpful to carry copies of these trade

magazines with them on their calls and bring the current advertisement to the attention of their prospects.

Now is an excellent time to check back on all your prospects. With the heat of summer coming to an end, many a forward-looking business man is ready to admit that the best way to avoid another summer's sales decrease is to install an air-conditioning system. Be sure to sell him a "Freon" installation. Remember, it's the safe, non-toxic, non-flammable, odorless—and therefore ideal—refrigerant.

FREON
REG. U. S. PAT. OFF.
a safe refrigerant

KINETIC CHEMICALS, INC., TENTH & MARKET STREETS, WILMINGTON, DELAWARE

AIR CONDITIONING

Rhodes Proposes 'Specifications' For Air Conditioning to Avoid Over-Cooling

Kinetic Chemicals, Inc.
Wilmington, Del.

Editor:

After leaving you in Detroit, I took a trip out through the middle west. One day while sitting in a comfortable chair in the living room of my mother-in-law's house on a Kansas farm, I picked up the local weekly, *The Grenola Gazette*, and in the boiler plate section found an article by Dr. Lloyd Arnold, Professor of Preventive Medicine of the University of Illinois, entitled "Air Conditioning." This article is interesting and well written, and I am therefore enclosing it. Dr. Arnold may be pardoned for his ignorance of the fact that heating and ventilating engineers have conducted much research to determine the proper conditions in air-conditioned space.

As there is perhaps just as much over-cooled as under-cooled air-conditioned space, it might be well to adopt a standard set of specifications for air conditioning to determine its quality. For the sake of developing the idea I propose the following specifications:

- (1) The temperature of air-conditioned space shall not be less than 68° F. nor less than 12° below the outside temperature.
- (2) The relative humidity of air-conditioned space shall not be greater than 55 per cent. nor less than 25 per cent.
- (3)* The amount of outside air circulated through air-conditioned space per hour shall not be less than x times the volume of such space.
- (4) The amount of foreign material removed from the outside air shall not be less than 95 per cent of the foreign material contained in such air.
- (5) The air shall be entered, diffused, and removed from air-conditioned space without the creation of drafts.

There is food for thought in the Arnold article, as it would be quite easy for the American public to get the impression that air conditioning is unhealthy and if the industry is to increase to the volume that is pre-

* x=12 for factories making toxic chemicals.

x= 6 for theaters and places of public assembly, including department stores.

x= 5 for shops, small stores, and hotel rooms.

x= 4 for private dwellings.

dicted for it by financial and commercial forecasters, it will be necessary for the industry to be guided by rules and specifications which will prevent the installation of improperly engineered air-conditioning systems.

I am told by those in the know in one of our large cities that more than half of the installations in that city during the past summer are poor installations. I suppose we may philosophize that every industry grows by the method of trial and error, but if the air-conditioning industry is wise, it will minimize the trial and error method of development and stick to sound engineering principles.

W. W. RHODES,
Sales Manager.

Dr. Arnold's Article

AIR CONDITIONING

By Dr. Lloyd Arnold

Professor of Bacteriology and Preventive Medicine, University of Illinois, College of Medicine.

"Almost everyone has had the experience on a hot summer day of going into a movie picture theater that has had a sign announcing, '70° COOL INSIDE.' For the first few moments we have a grateful sense of comfort. The air seems delightful after the sizzling blasts on the street. Then gradually it dawns on us that we are cold. If we have a wrap, we put it on. But most of us don't carry wraps when the temperature is near the hundred mark. Moreover, we have discarded every article of clothing that our sense of public decency will permit us to discard. We debate whether we should go out and get warm, but we remember the unbearable heat of the heat. Eventually, though, we leave, and as we reach the sidewalk, the hot air makes us gasp for breath. We feel suffocated; we become cold, clammy. We may even have a strong feeling of nausea. A few of us may collapse entirely. 'Obviously, this is over-refrigeration.'

"The purpose of air conditioning is to make us comfortable, and if we are uncomfortable when we go from the outside hot air into the inside cooled air, and acutely uncomfortable, almost to the point of sickness, when we go from the inside cooled air into the outside hot air again, then something is wrong.

"The skin is the largest organ of the body. If it were spread out on the floor, it would be the size of a rug 7 or 8 ft. square. When the outer air is cooler than the body, the skin tries to prevent heat loss by reducing the amount of warm blood flowing through this body covering layer. While it is impossible for the body to prevent loss of heat by this mechanism, still excessive dissipation of heat is avoided. But the skin loses heat and acts as a radiator in spite of all that the body can do. During cold weather we lose two-thirds of the heat value of food through our skins. Sixty-five cents of every dollar we spend for food is used to heat the air in which we live. On the other hand, in the summer the skin acts like a refrigerator. We secrete water into the outside skin and the evaporation of this water cools us.

Skin Has to Change

"When you go from the street to an artificially cooled room during a warm summer day, your skin has to change in a moment's time from a refrigerator to a radiator. On the street your skin is working to keep your inside organs from getting too hot, for when the temperature of the air is above normal body temperature, the skin works hard to keep the body from being heated up to the air temperature.

"The only health problem in artificially cooled theaters, restaurants, office buildings, and homes is the difference in temperature and comfort between the outside and the inside air. There are several separate points to be considered. The sense of comfort is the desirable end point. This is a combination of three factors; namely, temperature, humidity, and air movement. When the air is saturated with moisture, it feels hotter than air of the same temperature with lower humidity. Some recent work tends to show that there should not be more than 10° difference in temperature of the air inside artificially cooled rooms as compared to the outside air. But there should be 40 per cent less moisture in the air in the refrigerated rooms. There should be some air movement, but not a draft or wind, sufficient to keep still air pockets forming around people sitting in these rooms. The greatest factor, however, according to these investigators, is in the humidity of the air.

Effect of Rapid Change

"Some restaurants and theaters maintain a 20 to 30° F. difference in temperature between inside and outside air. Upon entering such a room—maintained at, say 70° F.—from a street temperature of 100° to 105° F., one feels a sense of coolness and well-being. Then adjustment of the body to the temperature takes place, and this sense of well-being disappears. Return to the street after an hour's sojourn is like stepping from northern Canada to southern Louisiana in one step. The skin tries to make this rapid adjustment as best it can. This is sometimes hard to do quickly.

"The internal temperature rises in spite of all the skin's valiant attempt to change itself instantaneously from a radiator to a refrigerator. That is why dizziness, nausea, and even collapse may accompany this rapid change from a November to a July day.

"We do not know enough about air conditioning of rooms in the summer time to make rules as yet. We have had many years of experience with heating rooms during the winter time. We need research and study upon the question of summer air conditioning of offices, homes, theaters, restaurants, and such places. The necessary equipment is expensive and special rooms must be constructed. The differences in temperature, humidity, and wind movement must be examined. Normal healthy people of various ages and sex must serve as subjects. The tendency is to over-refrigerate at this time. The right and healthy temperature should be a scientific formula."

Western Newspaper Union

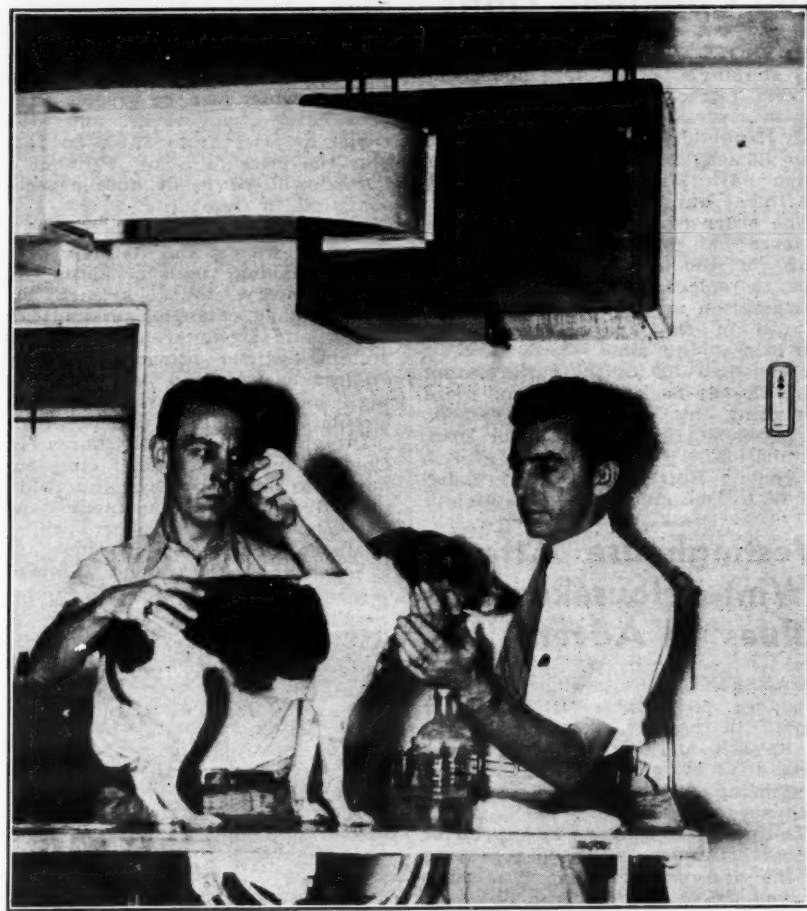
250 Attend Outing of Conditioning Bureau

BOSTON—More than 250 persons attended the second annual outing of the Air Conditioning Bureau of New England, at Scituate Country Club here. Julius Daniels, president of the bureau, gave a brief resume of the development of the new business and its association with general business recovery, in an address before the group.

W. J. Hajek of the Minneapolis Honeywell Co. was awarded the "president's cup," a three-year golf trophy placed in competition for the first time by President Daniels.

Assisting the general chairman in arrangements for the day's program were: W. D. Wilkinson, New England Power Co.; Bayard Robertson and Daniel Ricker, Boston Edison Co.; D. M. Ramsey, Jr., Westinghouse Electric & Mfg. Co.; John Pfeil and L. S. Kimball, Frigidaire Corp.; Harry C. Mayo, Lawton Engineering Co.; and Cyrus Barnes, C. H. Tenney Co.

Patients in Air-Conditioned Dog Hospital Convince Staff on Comfort Cooling's Merits



PHOENIX, Ariz.—Every dog has his day—of sickness—but he's air conditioned, when he comes to Kindness Hospital here, where Dr. F. D. McMahon, D.V.M., has installed air-conditioning equipment for the comfort of canine patients.

Despite extreme heat, which necessitated use of the system from 12 to 15 hours daily, Dr. McMahon reports that the operating cost was low.

Observations of relative humidity and temperatures from hygrometer

readings show that the humidity, on even the most humid days, never exceeds 40 per cent, while a temperature of 75 to 80° is easily maintained, Mr. McMahon says.

"We plan to install two additional units next year in our living quarters, because we have envied the dogs' comfort during the extreme heat this summer," he adds.

Electrical Equipment Co., Kelvinator distributor here, sold the equipment.

Rochester Paper Installs Air-Conditioning System for Office & Plant

ROCHESTER, N. Y.—That the newspaper industry offers a new field for air conditioning is indicated in the fact that the *Times-Union* Building here will be the world's second completely air-conditioned newspaper plant. Installation is being made by the Quinby Air Conditioning Corp., Rochester dealer for General Electric air-conditioning equipment.

The system will have a cooling capacity of 1,320,000 B.t.u. per hour, equivalent to about 110 tons I.M.E. in 24 hours. Circulation of conditioned air will be 45,000 cu. ft. per minute, including 20,000 cu. ft. of outside air. Refrigeration for the cooling coils will be supplied by five 20-hp. compressors and one 5-hp. compressor. The year-round air-conditioning

system will serve the entire building including the editorial rooms, composing rooms, press room, business and advertising offices, and executive offices. The system will be operated 24 hours a day to provide comfort for the 500 employees editing and printing the *Times-Union*, an evening paper, and the *Democrat & Chronicle*, a morning paper.

In summer the system will cool, dehumidify, clean, and circulate the air; in winter, the system will be operated in conjunction with the present steam heating plant and ventilating system, to filter, humidify, and recirculate the air.

The *Times-Union* Building is headquarters for a chain of 19 newspapers, of which F. E. Gannett is president.

Brown Develops New Line of Controls

PHILADELPHIA—The Brown Instrument Co., manufacturer of indicating, recording, and controlling instruments, has just announced a complete new line of recording and indicating air-operated controllers for temperature, flow, pressure, and liquid level.

Most outstanding of these is the Brown "Air-o-Line," a controller with 1 per cent to 150 per cent throttling range and automatic reset, recognizing and correcting for the magnitude, rate, and direction of departure from the control point.

These instruments are capable of full automatic control, and will maintain a process at the control point within extremely close limits, it is claimed.

A new feature in the "Air-o-Line" is the simplicity for "tuning in" the controller to the specific process characteristics without interruption to the automatic control. Throttling range and automatic reset dials are easily adjustable with a screw driver, without removing the chart plate.

Indicating and recording thermometer-type temperature controllers are available for temperatures within limits of minus 40° F. to 1,200° F. Potentiometer-type controllers are available for temperatures within limits of minus 300° F. and 3,400° F.

Two types of flow controllers and liquid level controllers are also offered; the inductance bridge type and the mechanical type. This combines in one instrument the remote operating characteristics of the electric flow meter and the flexibility of air-operated control.

Indicating and recording pressure controllers are available in ranges from 30 in. vacuum to 3,000 lbs. per sq. in. pressure.

McCord Refrigeration PRODUCTS

COMMERCIAL EVAPORATORS

DOMESTIC EVAPORATORS

CONDENSERS

METLFLEX ICE TRAYS

SPIRAL FINNED TUBING

AIR CONDITIONING SURFACE

McCord Radiator & Mfg. Co. - DETROIT

Substitutes come—and go

but

EXTRA DRY ESOTOO
VIRGINIA SMELTING

(Liquid Sulphur Dioxide)

is still the favorite
of the Service Man

The men who are constantly facing a variety of refrigeration problems, find practical solution of these problems in EXTRA DRY ESOTOO.

They appreciate its absolute dryness—secured by our exclusive patented process—its complete freedom from foreign substances in suspension.

A companion-product is V-METH-L—widely used in Ice Cream Cabinets, Showcases, etc. For data on both—the coupon.



VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA

F. A. Eustis, Sec'y, Virginia Smelting Co., 131 State St., Boston, Mass.
Send me the literature I have checked. I am interested in receiving any additional literature on Electrical Refrigeration you may issue from time to time.
☐ Folder Extra Dry ESOTOO (Liquid Sulphur Dioxide) ERN-9-11-35
☐ Folder V-METH-L (Virginia Methyl Chloride)
☐ Folder: Transferring from large to small cylinders
☐ Circular: Physical properties of various refrigerants
Name
Street & No.
City & State

MAIL THIS COUPON NOW

Frigidaire Guide Interprets Air Conditioning In Terms Layman Can Understand

DAYTON—An educational consumers' guide, written for those who are contemplating the purchase of air-conditioning equipment and wish to have some of the fundamentals before them for study, has just been issued by the air-conditioning division of Frigidaire Corp.

One of the first promotional pieces in the purely "educational" side of air conditioning, the booklet is an attempt to reduce the science to terms which the layman can easily understand.

In the preface, it is emphasized that "to buy an air-conditioning system intelligently is not a difficult matter, when a few simple factors are thoroughly understood."

No Comparative Standard

Chief cause of confusion at present, the booklet states, is that, since air-conditioning systems are necessarily "tailor made" to suit the needs of different types and sizes of premises, there is no fixed standard of comparison as to equipment and price. Technical and engineering aspects also puzzle the layman.

The first thing to be considered, says the booklet, is the space to be conditioned, and whether the system to be installed is to be used to condition all of this space, or only a part of it. Next, outside design temperatures must be known by the engineer figuring on the installation. A.S.H.V.E. recommendations are accepted as standard.

Temperature Differential

The principal point to remember, in determining inside design temperature, is that the amount of difference between it and the outside design temperatures has a direct bearing on the amount of equipment required, and this in turn has a very important effect on the price of the job, the booklet states.

Another thing which the prospective buyer is asked to consider, in planning for air conditioning, is that internal heat sources must be carefully studied, because of their direct effect on the efficiency and cost of the job. Under normal conditions of activity, such as walking, the average person gives off as much heat as three ordinary light bulbs—and this heat rises to as much as 1,500 B.t.u.'s per hour during violent exercise, it is pointed out.

In addition to the number of occupants, importance of taking into

account all heat-generating equipment, such as stoves, lights, electric motors, and other appliances, is also cited.

Ventilation is an important part of every air-conditioning system, and the booklet devotes considerable attention to the two methods by which this may be accomplished: specifying the number of cu. ft. of air per person, or the number of air changes per hour.

Ten cu. ft. of air per person per minute is cited as a good average figure, or from 1½ to 4 air changes per hour, if the second method is used.

Elements Entering into Cost

In considering the general design of the system, several elements enter into the cost of the completed job. These, the booklet lists as follows:

1. The appearance of the completed job. That is, whether it shall be "rough" or "fancy."

2. The "salvage" value. This is of special importance if a duct system is to be installed. Unit systems may be moved easily—but in most cases duct work is of little use in buildings other than the one for which it was originally intended.

3. Controls. Prospects are asked to be sure they understand just what control system they are securing—its possibilities, and its limitations. This is largely a matter of personal choice, but readers are urged to choose carefully between manual and automatic control systems.

Operating Cost

4. Cost of operation. Low operating cost, the booklet points out, is usually the result of careful design, quality, and precision manufacture.

5. Items included in the price. Not all installation prices include everything the customer expects to get. The prospect is advised to check cost against items, to be sure that misunderstandings will be avoided.

The booklet also discusses guarantees—performance, equipment, and service—and counsels the reader to see that all three are definitely stated in the contract for his installation. Final word stresses the importance of knowing the manufacturer's and dealer's facilities for serving customers, their financial responsibility, their experience in air-conditioning work, and their ability to handle promptly all repair and service requirements.

fact that true air conditioning must involve simultaneous control of temperature, humidity, air motion, air distribution, dust, bacteria, odors, and toxic gases, and cautions against a loose use of the term, with particular regard to the cleaning and circulating of air.

This section of the book discusses the factors determining comfort, effective temperature, comfort zones, metabolism, heat and moisture loss, humidity and air motion, air pollution, air supply and distribution.

Ventilating and air-conditioning systems are discussed in another chapter, with diagrams to illustrate the workings of unit ventilators, office and school ventilating systems with both trunk and individual ducts, and fan systems for theaters. Methods of air introduction and distribution are treated at some length, both in text and drawings.

The chapter on the design of central fan systems is taken up principally with the various engineering problems incidental to this phase of the work. Unit systems are considered in another section, as are the various types of filters, washers, and humidifiers.

In the chapter on mechanical cooling, attention is called to the potential future market in this field. After consideration of the attic-fan system for night cooling, the chapter treats of the three artificial methods, employing well water, ice, and mechanical refrigeration.

Both compression and absorption type refrigerating systems are discussed at length, as are the various refrigerants, cooling coils, dehumidifying methods, the cooling and dehumidifying load, sun radiation through windows, infiltration, occupants, and lighting, the relation between cooling and dehumidification, by-passing and other arrangements, and seasonal cooling requirements.

Industrial air conditioning, and its application to various industries, is dealt with in the book's final chapter. Difference between air conditioning and comfort cooling is shown, and the fact brought out that, while residential air-conditioning requirements may be dependent on outside conditions, the conditions in the factories requiring air conditioning are usually desired to be kept constant, regardless of outside temperature.

An appendix lists tables of recommended conductivities and conductances for computing various heat transmission coefficients, and standard symbols for heating and ventilating drawings.

Air Conditioning Boosts Restaurateur's Volume

MOBILE, Ala.—Air conditioning has spread luncheon and dinner peaks over a longer period, and checks have increased in number and amount, claims Constantine Panalyioton, owner of Constantine's Restaurant here, which was air conditioned about a year ago by the Marine Specialty Co., dealer for Carrier air-conditioning equipment here.

The cooling plant for the air-conditioning system, consisting of two methyl chloride compressor units and condensers, each driven by a 10-hp. motor, was installed in the kitchen. Adjacent to the compressor site, a well 90 ft. in depth was drilled and a 2-hp. pump installed to supply 50 gals. of condenser water a minute.

The air-conditioning unit, consisting of filters, cooling coils, and 2-hp. fans, is located in an old storage space on the second floor. Conditioned air is supplied to and returned from the dining rooms by duct system. Conditions maintained in the dining rooms are 78° F. dry bulb temperature with a relative humidity of not more than 50 per cent.

The refrigerating machines are capable of removing heat and humidity from the restaurant at a rate corresponding to the melting of 25 tons of ice in 24 hours.

Restaurants Promote Conditioners during Installation Period

CHICAGO—Use of air conditioning as a promotion feature, from the time a system was contracted for until the final installation, has lured customers into the Younkers' restaurants here.

When the managers of Younkers' ordered Kelvinator air-conditioning equipment installed in their two Chicago restaurants, they began an aggressive advertising campaign, featuring the advantages of comfort cooling.

Announcements were attached to the menu cards before the installations were started. These cards were changed twice weekly to inform the patrons of the progress being made in the installations. They contained notes of apology when construction materials began to clutter up the interiors.

Modernistic window displays, featuring two giant dummy thermometers contrasting the outside and inside temperatures, announced that the installations were completed.

Air-conditioning equipment used in the two restaurants is of the concealed duct type.

Kelvinator air-conditioning equipment is to be included in a Younkers' restaurant soon to be opened in Evanston.

Southern Builder Predicts Air-Conditioning Growth

BIRMINGHAM, Ala.—That a large majority of the better office buildings and apartments in the South will have air-conditioning equipment within the next five years was predicted recently by A. J. Cory, Memphis, executive vice president of the Southern Conference of Building Owners and Managers.

"I firmly believe development of the air-conditioning industry will pull us out of this depression," he said. "It promises to do for this age what the automobile industry has done in the past."

Air conditioning in the building field, Mr. Cory said, will be a chief topic of discussion at the annual January meeting of the Southern Conference of Building Owners and Managers to be held in this city.

Trane Pamphlet Describes Heaters & Humidifiers

LA CROSSE, Wis.—Recently issued by the Trane Co. is a new piece of literature describing the features of convection heaters, humidifiers, and the Trane orifice heating system. The major part of the pamphlet is devoted to the orifice system. The last three pages deal with installation details of the system.

BOOKS

Heating & Air Conditioning

Authors: John R. Allen and James Herbert Walker. Publisher: McGraw-Hill Book Co., Inc. Pages: 435. Price: \$4.

PREVIOUSLY titled "Heating and Ventilating," the book has been revised in content as well as in title, with a preface by James Herbert Walker, co-author, superintendent of heating for the Detroit Edison Co., and a chapter on hot-water heating systems by F. E. Giesecke, director of the agricultural experiment station at Texas A. & M. College.

Intended primarily as a textbook for engineering and architectural schools, and for the individual student of air conditioning, this fourth edition has been necessitated by the recent rapid advances in air conditioning, and by the growing importance of that field.

Best practice, rather than personal opinion, has been the aim of the author in compiling the book. To that end, extensive use has been made of material from other sources, particularly publications of the A.S.H.V.E.

Much material has been added to the sections on air conditioning, but this has been balanced by condensing of other chapters, particularly those on hot-water heating, so that the general size of the book has not been greatly altered.

First 250 pages of the book are concerned with heating and heating problems. Considered, in this respect, are heat losses from buildings, steam and its properties, methods of heating, warm-air heating, radiators, fuels and boilers, steam heating systems, pipes, valves, and accessories, steam piping, hot-water heating systems, and central, district, and electric heating.

The section on air conditioning is prefaced by a chapter on air and its properties, in which water vapor, relative and absolute humidity, wet-bulb temperature as a measure of total heat are discussed, and a psychrometric chart, showing graphically the properties of air on the basis of 1 lb. of dry air, is given.

The chapter on the principles of air conditioning calls attention to the



Ever abreast of the advancing requirements of the industry, Kerotest presents 7 large valves primarily designed for use on large commercial and air conditioning unit compressors.

Types No. 628 and No. 630 are made of forged brass while types No. 632, 633 and No. 634 are made of forged steel making available Kerotest quality Compressor Valves up to 2½\".

Forged Steel, in the larger valves, was selected by Kerotest engineers, after careful tests, as being the ideal material for compressor valves of this size.

Also illustrated are the new Kerotest Type 455 and

456 Diaphragm Packless Globe Valves in 1¼\" and 1½\" sizes, with four bolt hole, square ammonia type flanges . . . generally used on large commercial and air conditioning installations.

Note the bolted, flanged-bonnet construction which permits servicing these large valves while contained on the tubing lines without removing the valve from the line of service—an exclusive Kerotest feature, common to all Kerotest Diaphragm Packless Valves, and used extensively by one of the world's leading manufacturers of refrigeration systems.

Write for quotations and detailed particulars.

KEROTEST

KEROTEST MANUFACTURING CO. . . . PITTSBURGH, PA.

STATISTICS

152,364 Household Refrigerators Sold During July by 14 Manufacturers

The following 14 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales and inventories for July, 1935: Apex Electric & Mfg. Co., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Servel, Inc., Stewart-Warner Corp., Sunbeam Electric Mfg. Co.,

Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co. The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigerator Corp., Sears, Roebuck & Co., and Truscon Steel Co.

SALES FOR JULY, 1935						
Lacquer (Exterior)		Domestic		Canadian		Other Foreign
Cabinets	Complete	Quantity	Value	Quantity	Value	Quantity
1. Chest		2,212	\$ 108,497	136	\$ 6,602	206
2. Less than 3.00 cu. ft.		75	4,006	.....	.....	21
3. 3 to 3.99 cu. ft.		5,323	303,870	33	1,872	1,128
4. 4 to 4.99 cu. ft.		35,908	2,311,973	636	45,184	4,297
5. 5 to 5.99 cu. ft.		37,424	2,889,190	345	26,167	896
6. 6 to 6.99 cu. ft.		20,255	1,820,489	192	17,245	713
7. 7 to 7.99 cu. ft.		10,032	1,055,624	201	22,304	236
8. 8 to 8.99 cu. ft.		2,540	288,209	15	1,649	123
9. 9 to 12.99 cu. ft.		44	8,545	1	149	.....
10. 13 cu. ft. and up		7	1,902	.....	.....	.....
11. Total Lacquer		113,823	8,792,296	1,559	121,172	7,620
Porcelain (Exterior)						
Cabinets	Complete					
12. Up to 4.99 cu. ft.		1,357	97,370	55	5,279	162
13. 5 to 5.99 cu. ft.		4,599	395,560	16	1,344	212
14. 6 to 6.99 cu. ft.		4,282	440,023	3	390	117
15. 7 to 7.99 cu. ft.		3,672	438,946	12	1,496	133
16. 8 to 8.99 cu. ft.		1,678	244,737	9	1,124	92
17. 9 to 12.99 cu. ft.		542	95,599	2	397	43
18. 13 cu. ft. and up		271	65,196	2	317	15
19. Total Porcelain		16,401	1,777,431	99	10,347	774
20. Total Lines 11 and 19		130,221	10,569,727	1,658	131,519	8,394
21. Separate Systems						
1/2 Hp. or Less		9,823	403,168	.....	.....	1,941
22. Separate Household						
Evaporators		206	4,813	47	710	74
23. Total Lines 20, 21, 22		140,250	.....	1,705	.....	10,409
24. Condensing Units						
1/2 Hp. or Less		610	37,462	46	2,720	281
25. Cabinets—No Systems						
		53	5,759	.....	1,124	.....
26. Total Household			\$11,020,929	.....	\$134,949	.....
						\$761,460

13,674 Commercial Machines Shipped By 19 Companies during July

Commercial sales for July, 1935, were reported to the National Electrical Manufacturers Association (Nema) by 18 companies, some of which are not members of the association. These reports cover the sale of units less than 1 hp. in size. Companies reporting are: Baker, Ice Machine Co., Brunner Mfg. Co., Carbon-dale Machine Corp., Carrier Engineering

Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Corp., Kelvinator Corp., Leonard Refrigerator Co., Norge Corp., Phoenix Ice Machine Co., Reliance Refrigerating Machine Co., Servel, Inc., Uniflow Mfg. Co., Universal Cooler Corp., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

SALES FOR JULY, 1935						
	Domestic		Canadian		Other Foreign	
	Quantity	Value	Quantity	Value	Quantity	Value
1. COMMERCIAL						
1. Water Coolers Complete...	2,593	\$ 260,260	5	\$ 484	57	\$ 5,821
2. Water Coolers Remote...	103	6,746	6	294	3	419
3. Ice Cream Cabinets Complete	1,490	173,943	41	4,491	97	10,250
4. Ice Cream Cabinets Remote	533	76,295	7	851	20	2,543
5. Beverage Coolers Comp.	2,282	165,599	16	1,052	30	2,098
6. Beverage Coolers Remote.	541	35,297	.....	.....	1	62
Condensing Units						
7. Less Than 1/2 Hp.	769	40,264	6	403	334	20,471
8. 1/2 to 1 Hp. Inc.	3,732	322,506	103	9,110	950	51,631
9. Above 1/2 and Less Than 1 Hp.	958	124,230	13	1,745	198	26,705
10. Total Lines 7, 8, and 9.	5,459	.....	122	1,482	.....	.....
11. Total Lines 1, 3, 5, 10...	11,824	.....	184	.....	1,666	.....
12. Evaporators	4,434	137,198	217	7,551	570	14,705
13. Miscellaneous Cases and Cabinets	36	8,725	3	400	6	1,683
14. Total Commercial	.....	\$1,351,063	.....	\$26,381	.....	\$136,388

Industry Sales Crack Record for July

(Concluded from Page 1, Column 5)

tribution of sales, was in fourth place during July, with Ohio a close fifth. Reports from 19 member companies of the Commercial Refrigeration Section of National Electrical Manufacturers Association showed world sales of commercial condensing units by these companies in July to total 13,674 units.

Although there are no 1934 figures with which this total can be compared, the July commercial sales figure at least compares favorably with those of other months this year, and showed no marked dropping-off tendencies as has been the case with commercial sales in some summers in the past.

Companies reporting to the Household Refrigeration Section in July were Apex, Crosley, Frigidaire, General Electric, Gibson, Kelvinator, Leonard, Norge, Servel, Stewart-Warner, Sunbeam, Uniflow, Universal Cooler, and Westinghouse. Nema members not reporting were Jomoco, Merchant & Evans, and Sparks-Withington. Refrigeration units made by Nema members for Major Appliance Corp., Montgomery Ward, Potter Refrigerator Corp. (Nema member), Sears, Roebuck & Co., and Truscon Steel Co. are included in the Nema total.

New York & California Lead States in Sales During July, 1935

The following report of sales by 14 manufacturers of household electric refrigerators is a distribution by states of their sales for July, 1935. The companies reporting are listed at the left above.

States and Territories	Quantity of Household Low Sides
Alabama	1,473
Arizona	373
Arkansas	829
California	12,747
Colorado	1,422
Connecticut	2,829
Delaware	309
District of Columbia	1,191
Florida	2,201
Georgia	2,958
Idaho	652
Illinois	9,711
Indiana	4,005
Iowa	2,100
Kansas	1,722
Kentucky	1,691
Louisiana	1,273
Maine	914
Maryland	1,812
Massachusetts	6,072
Michigan	5,041
Minnesota	2,496
Mississippi	610
Missouri	4,091
Montana	752
Nebraska	1,357
Nevada	238
New Hampshire	580
New Jersey	6,113
New Mexico	297
New York	18,629
North Carolina	1,729
North Dakota	354
Ohio	9,103
Oklahoma	1,334
Oregon	1,507
Pennsylvania	11,768
Rhode Island	736
South Carolina	1,312
South Dakota	513
Tennessee	1,974
Texas	4,642
Utah	476
Vermont	421
Virginia	2,119
Washington	1,790
West Virginia	1,617
Wisconsin	2,068
Wyoming	289
Total United States	140,250
Canada	1,705
Other Foreign (Including U. S. Possessions)	10,409
Total for World	152,364

Phillips Made Works Mgr. For Westinghouse

EAST PITTSBURGH—T. I. Phillips has been appointed general works manager of Westinghouse Electric & Mfg. Co., F. A. Merrick, president, announces. He will serve as central authority for all manufacturing operations of the company.

Mr. Phillips has held various positions of executive responsibility with Westinghouse since 1915.

He succeeds C. H. Champlain, who, because of illness, relinquished his activities with the company.

Advertising Manager of Ice Magazine Dies

EVANSTON, Ill.—Robert Millen Babbitt, vice president and advertising manager of Ice and Refrigeration Magazine, died at his home here on Saturday, Aug. 31.

Exports of Electric Refrigerators

May, 1935, Shipments Reported by the Bureau of Foreign and Domestic Commerce, Washington, D. C.

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators
	Number	Value	Number	Value	Value
Austria	14	\$ 972	16	\$ 1,637	\$ 2,321
Azores and Madeira Islands	...	...	...	...	163
Belgium	234	18,777	115	8,578	10,010
Czechoslovakia	46	4,430	...	...	8,159
Denmark	...	...	3	157	3,243
Finland	67	4,822	27	2,605	2,780
France	1,576	124,236	240	22,873	33,746
Germany	3	251	...	...	29,499
Gibraltar	...	...	...	...	64
Greece	...	...	2	382	348
Irish Free State	46	3,675	59	7,661	305
Italy	114	9,630	2	472	4,358
Malta, Gozo, and Cyprus	...	...	...	...	10
Netherlands	183	15,016	21	2,219	6,896
Norway	161	11,407	57	5,879	8,423
Poland and Danzig	3	358	...	...	173
Portugal	68	5,397	11	1,464	753
Rumania	1	110	...	...	4,810
U.S.S.R. (Russia, Europe and Asia)	6	994	...	...	...
Spain	273	21,788	80	9,373	15,401
Sweden	318	23,387	240	23,858	12,854
Switzerland	52	4,858	...	...	12,758
United Kingdom	1,705	125,667	725	48,261	62,870
Yugoslavia	10	720	...	...	...
Canada	475	27,560	164	16,981	85,436
British Honduras	...	...	...	...	6
Costa Rica	7	806	...	...	30
Guatemala	9	904	...	...	35
Honduras	9	1,273	3	473	674
Panama	35	4,424	8	1,023	2,322
Salvador	9	750	1	238	...
Mexico	583	48,014	13	2,185	10,070
Newfoundland and Labrador	24	2,130	...	...	8
Bermuda	49	4,612	2	360	304
Barbados	9	793	...	...	84
Jamaica	...	...	...	...	81
Trinidad and Tobago	21	2,094	...	...	58
Other British West Indies	3	246	...	...	...
Cuba	133	13,238	16	2,376	8,587
Dominican Republic	3	229	...	...	17
Netherlands West Indies	58	5,038	12	1,202	1,065
French West Indies	16	1,206	...	...	78
Haiti, Republic of	23	2,725	3	574	37
Argentina	204	11,172	36	2,655	8,579
Bolivia	...	...	...	...	25
Brazil	807	68,377	129	14,393	12,308
Chile	38	3,108	...	...	459
Colombia	56	5,100	...	...	713
Ecuador	7	564	...	...	33
British Guiana	21	1,604	...	...	18
Surinam	5	384	...	...	16
Peru	41	3,820	21	1,813	360
Uruguay	122	11,440	51	3,842	1,117
Venezuela	2	271	5	1,133	682
Aden	154	12,829	1	238	...
British India	96	8,993	50	5,586	12,356
British Malaya	7	568	1	212	2,566
Ceylon	296	22,364	26	3,809	685
China	229	20,651	26	3,809	782
Netherlands India	229	20,651	27	4,051	3,384
French Indo-China	113	14,615	2	1,211	1,650
Hong Kong	58	5,119	2	200	775
Japan	55	3,562	...	...	4,621
Kwantung	32	1,263	...	...	...
Palestine	1,142	86,208	48	6,334	7,649
Iraq	3	400	1	126	28
Philippine Islands	44	3,753	26	3,916	1,450
Siam	6	365	...	...	11
Syria	30	2,432	3	464	134
Turkey	322	27,065	28	4,979	2,166
Other Asia	...	...	...	...	1
Australia	18	1,620	...	...	14,402
New Zealand	9	694	19	1,799	4,324
Belgian Congo	...	...	...	...	36
British East Africa	16	1,310	...	...	260
Union of South Africa	264	21,049	5	614	5,949
Other British South Africa	...	...	...	...	37
Gold Coast	17	1,567	...	...	90
Nigeria	8	807	...	...	25
Other British West Africa	...	...	...	...	292
Egypt	72	6,566	6	504	709
Algeria & Tunisia	488	37,804	35	3,281	1,555
Madagascar	10	858	...	...	...
Other French Africa	69	6,828	...	...	18
Italian Africa	46	3,937	...	...	39
Morocco	221	16,605	2	373	507
Mozambique	18	360	...	...	719
Other Portuguese Africa	4	390	...	...	...
Canary Islands	41	3,349	...	...	1,404
Other Spanish Africa	42	2,930	1	109	124
Total	11,579	\$915,238	2,345	\$222,473	\$421,894
Shipments to Hawaii	418	41,354	66	7,747	5,643
Puerto Rico	354	33,812	15	3,331	3,487
Virgin Islands	1	80	...	...	14



ALL-AMERICA CHOICE FOR THE REFRIGERANT TEAM

ANSUL CHEMICAL COMPANY
MAR

"The Bible tells how to get a prospect. It says right out plain 'Seek and Ye shall find'.

"... in plain English, if you have something to sell, tell the world about it."—from "Sales Idea of the Week" by V. E. Vining, in last week's issue of Electric Refrigeration News.

If you are a manufacturer of parts and supplies used in refrigeration or air conditioning and—

If you want manufacturers of complete systems to know about your products, and to give them consideration in planning specifications for 1936 models or—

If you have a sales message that can help parts jobbers in rounding out their lines of merchandise for next year—

Right now you have an opportunity to "tell the world about it"—the world of your potential market—and to simplify seeking out next season's customers.

ELECTRIC REFRIGERATION NEWS makes this opportunity available in coming issues to feature parts, materials, and supplies, beginning Sept. 25. New designs, mechanical improvements, more useful gadgets. Each phase of parts and supplies information will be discussed in authoritative engineering articles, and news on new developments will be given a full measure of editorial attention.

With the particularly tough job of making up specifications for 1936 models, manufacturers of complete systems welcome any information which will lighten the task. With the prospect of continually rapid growth, parts jobbers are on the alert for facts upon which to base their choices of merchandise for the coming year.

That's why the coming issues will be read most thoroughly, and then be kept for reference.

That's why they offer unusual advertising opportunities to the manufacturer of refrigerator parts, materials, and supplies.

That's why we say your problem in making an effective presentation of your product can be substantially lessened. The sales message in a made-to-order editorial background, at a time when the material to be presented is much in demand, is doubly effective.

Two coming issues of the News to feature new developments in refrigerator parts, and supplies, also the servicing of parts are outlined below.

September 25—Valves and Fittings
Progress in the design and applications of valves and fittings will be discussed in this issue, with particular emphasis on new developments now introduced on the market. Advertising forms close Sept. 21.

October 9—Motors and Motor Controls
New features of motors and motor controls for refrigeration and air-conditioning applications will be outlined and special editorial attention will be given to the care and servicing of these items.

ISSUE OF **OCTOBER 2**

FEATURING

CONDENSING UNITS

This issue will cover complete condensing units available for assembly of 1936 household electric refrigerator models, and will afford a "preview" of 1936 commercial refrigeration machines. Also to be given consideration are new developments in compressor parts, condensers, refrigerants, and compressor oils.

**WRITE TODAY FOR
YOUR SPACE RESERVATION**

**BUSINESS NEWS
PUBLISHING CO.**

5229 Cass Ave., Detroit, Mich.

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office
Copyright, 1935, by Business News Publishing Co.
Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242.

Subscription Rates—U. S. and Possessions and all countries in the Pan-American Postal Union: \$3.00 per year; 2 years for \$5.00. Canada: \$6.00 per year (due to special tariff). All Other Countries: \$5.00 per year (U. S. Money). See "Buyers Guide" columns for combination rates with the 1935 Refrigeration Directory and Market Data Book. Notice: We employ no subscription agents or solicitors. Pay no money to strangers claiming to represent this company. Send orders and remittances direct by mail.

F. M. COCKRELL, Publisher

GEORGE F. TAUBENECK, Editor
PHIL B. REDEKER, Managing Editor
FRANCES McNAMARA, Assistant Editor
THEODORE T. QUINN, Staff Writer

GEORGE N. CONGDON, Business Manager
JOHN R. ADAMS, Production Manager
JEAN H. ADAMS, Subscription Manager
ROBERT P. NIXON, Asst. Business Manager
HELEN K. GILMORE, Assistant Adv. Mgr.

Member, Audit Bureau of Circulations
Member, Associated Business Papers
Member, Periodical Publishers Institute

VOL. 16, No. 2, SERIAL NO. 338, SEPT. 11, 1935

A Clean Business

RIGHT now three of the foremost advertising agencies in the country are engaged in a highly interesting task; i.e., they are making an intensive study of the refrigeration industry and its market, with a view toward soliciting the "account" of one of the industry's leading manufacturers—an organization which has signified its readiness to do business with one of these three agencies.

Thoroughly familiar with the methods and practices of sales research, these advertising agencies have been sending their trained investigators out to interview owners of electric refrigerators, prospective owners, dealers (past, present, and prospective), salesmen, and distributors. Some of the information these investigators are digging up is indeed interesting, although a good share of it leads to observations and conclusions which are not altogether new or surprising to those who have been close to the refrigeration picture for a number of years.

Universally, however, the investigators for all three agencies have reported back one fact which these advertising executives deem highly significant: *electric refrigeration has been an extraordinarily clean business.* Nor is the emphasis on "has been"—the past tense is used merely to indicate caution about making any predictions as to the future.

Little to Kick About

True, investigators who have called on dealers and salesmen have received their share of complaints about chiselling, price-cutting, dumping, trade-ins, free deals, misleading advertising, and questionable competitive tactics. They have heard tales about unfortunate dealers being forced out of business, about hard-hearted manufacturers, about unscrupulous competitors. Yet, say these skilled fact-diggers, the average refrigeration dealer and salesman have scant excuse for tears.

"If you think your competition is mean in the refrigeration business, if you are worried by inroads of the mail-order houses in your business, if trade-ins and price-cutting get under your hide," these investigators feel like telling refrigeration men who grumble, "go into the automobile tire business for awhile. Then you'll learn what cutthroat competition really is."

These men go on to recite comparisons between the business of selling refrigerators and

High Type of Business Men

other merchandising enterprises, and invariably the contrast is most revealing—and greatly in the favor of refrigeration.

In all their experience in studying specific industries and their distribution problems, some of these research workers have told the editor of ELECTRIC REFRIGERATION NEWS, they have never run across a business which presents so shining an example of fair competition, friendly and harmonious relations between dealers, religious adherence to a high type of sound merchandising practices, and square dealing with the consumer, as the electric refrigeration industry.

To a number of different classifications of

readers of the NEWS, this observation should carry considerable significance. For example: Appliance dealers, especially of the larger variety, who are now making their plans for 1936, can be reminded that especial attention given to electric refrigeration promotion not only should pay exceptional dividends, but is less likely to be upset by unpredictable competitive tactics of the "dirty" variety. And those dealers with a chronic grouch on can be reminded to go over and get better acquainted with the merchant across the street, learn his troubles and grief, and then note how well off they are in comparison.

Plumbers or Specialty Dealers?

Again, manufacturers of air-conditioning equipment who are now wavering as to their decision on whether to merchandise their products through heating and ventilating outlets or refrigeration specialty dealers, may well pause to consider the high type of men refrigeration dealers are, the high type of merchandising and promotion to which they have become accustomed, and the generally praiseworthy stage of the industry to which they owe allegiance and which owes them its good health and comfortable financial condition.

The same line of reasoning holds true for manufacturers of oil burners, ranges, washing machines, radios, and other companion merchandise. In addition to scrutinizing the astounding sales records hung up by electric refrigeration dealers and distributors, even through the worst years of the depression, concerns which are pondering distribution methods will do well to take note of the extraordinary "cleanliness" which seems to pervade the refrigeration industry.

Should Impress Investors

Still another class of men who should be interested in these findings are investors and financial houses. Obviously an industry which has done such an outstanding selling job, and which is at the same time receiving the plaudits of impartial investigators for the "clean" manner in which it does business, is an industry with which investors and financial agencies may safely and preferentially entrust their dollars.

Perhaps this is a good time for electric refrigeration men to count their many blessings; and, although New Year's Day is a good many weeks distant, it may be an equally good time to resolve to maintain, and better, the high standards of practice which single this industry out from others as a most excellent one in which to do business.

WHAT OTHERS SAY

'March On!' Says Roosevelt

THE President's assurance of a "breathing spell" to business is important, as any revelation of the Executive mind is of moment to the country.

Mr. Roosevelt's letter to Journalist Howard is called a "signal to go." In fact, it does no more than affirm the opportunity which was opened to business with the adjournment of the Congress. The capacity of government to encourage the uncertainty which has gripped the community of affairs for many months has largely dwindled with the dispersing of the lawmakers. The President points out, rather than promises, a clear field to enterprise, impeded until now by fears of unfavorable new tendencies in government.

It remains then for that part of the business community which has given the excuse of uncertainty for its lack of enterprise to respond to this assurance of the White House. The President remarks that it will proceed under new rules. If the rules already formulated dismay the timid, they may as well adjust themselves to them. At least, the new code is largely finished, on the President's word. "This basic program has now reached substantial completion," he tells Mr. Howard, "and the breathing spell of which you speak is here—decidedly so."

In this connection we can not resist another allusion to the conduct of the automotive industry throughout the emergency, and its immunity to the qualms which seemed to paralyze so many lines. It was bound to be affected by whatever influences were felt by business generally. It was as susceptible as other industry to any forces set in motion by the New Deal.

Whether through the valor of ignorance or faith in the country, or both, it went ahead, oblivious to the alarms of the timorous, demanding nothing of Washington, expecting nothing, and applying itself to the job it knew—the building and selling of machinery.

It has always seemed to us that a little more of the old American intrepidity and gambling spirit in a little larger part of the business community would have made superfluous the assurances that came from Hyde Park.—From Detroit News.

LETTERS

Service Article Reprints

Watson Way
Bellefontaine, Ohio

Editor:

On Aug. 9, I sent you a check for an advance order for a copy of the MASTER SERVICE MANUAL. I have not as yet received the reprints of articles published to date as offered. Please check this.

I think your paper, ELECTRIC REFRIGERATION NEWS, is excellent. I would not do without it. Please send a copy of the April 3 issue.

CHARLES W. COOK.

Answer: We are now printing a booklet of 112 pages containing the first six chapters of the "Master Service Manual." These six chapters consist of the articles by K. M. Newcum published serially in the weekly issues of the NEWS from April 10 to Aug. 21, 1935, inclusive.

This booklet, which will be ready for delivery soon, is being offered free to those who send in advance paid orders for the complete book which will be ready on or about Jan. 1, 1936. The advance price of the book is \$3.00.

The 112-page booklet is also being offered to those who send in a \$3.00 subscription to the NEWS starting with the issue of Aug. 28, 1935. This offer does not include the complete book, when published.

How Reprints

Are Obtainable

914 S. Montgomery St.
Sherman, Tex.

Sept. 4, 1935.

Editor:

I received my first copy of ELECTRIC REFRIGERATION NEWS today and I am well pleased with it. I read your offer in regard to the pamphlets by K. M. Newcum and wonder if I am eligible to receive these pamphlets even though my subscription has already been started.

If you can please send them to me I will appreciate it very much.

W. L. ROBERTS.

Newcum Series 'Valuable'

Wagner Electric Corporation
6400 Plymouth Ave.
St. Louis, Mo.

Editor:

We want to thank you for publishing K. M. Newcum's article "Operating Characteristics of Repulsion-Induction Motors" in your Aug. 28 issue. This series of articles by Mr. Newcum, we are sure, has been of great value to your readers.

H. H. COHENOUR,
Advertising Department.

303 E. 196th St.
New York, N. Y.

Editor:

I wish to thank you for the sample copy that you sent me. I was so well impressed with your paper that I am enclosing \$3.00 for my subscription for one year. Also please send me the previous articles written by Mr. Newcum. I find them of great value to the service man.

From the little that I have seen it, I would not hesitate to recommend the ELECTRIC REFRIGERATION NEWS to anyone affiliated with the industry in any way.

RICHARD J. WURSTLIN.

Part of a Series

Bussmann Mfg. Co.
Division of the McGraw Electric Co.
University at Jefferson, St. Louis

Editor:

We understand that in recent issues of your publication ELECTRIC REFRIGERATION NEWS has appeared an article called "The Birth of a Canned Sales Talk," written by one of the executives of the National Cash Register Co.

Can you please tell me how I can secure a copy of the complete article?

H. DACUS,
Mgr., Buss Light Dept.

Answer: "Article" referred to is part of a continued story on the Development of the Specialty Selling Formula by John H. Patterson, late president of the National Cash Register Co., which has been running serially in ELECTRIC REFRIGERATION NEWS since July 17.

Chapter to which you refer appeared in the Aug. 7 issue. This series was not written by an executive of the National Cash Register Co., but by Editor George F. Taubeneck.

'New Classic'

1634 East Duval St.
Philadelphia, Pa.

Editor:

You don't know me, but I have been following your "kolyum" since its inception, and have found it good.

After continuous silence I now burst into song to cast my unstinted praises upon your story of John

Patterson. And to ask if you plan to publish same in book form at the conclusion of the serial articles?

I shall want a copy of this new classic to stand beside "Jubilee Jim," the story of notorious Jim Fiske and Jay Gould, and "The Book of Daniel Drew" by Bouck White, on my personal book shelves.

Congratulations—keep it up!

EARL P. GOODISON.

Don't Bother About It

Auburn Motor & Electric Co.
Auburn, Calif.

Editor:

Can you advise us where we can find out what is the circulation of Consumers Research? Or can you tell us?

Thanking you for your usual courteous and prompt attention, we beg to remain,

J. O. HARRINGTON.

Answer: The subscription list of Consumers Research is not audited by any recognized agency, so far as we know.

In an article published in the NEWS, we commented on the work of this organization and summed it up as "a good idea gone wrong."

There seems to be an opportunity for a sincere, capable, and independent agency to provide reliable and unbiased information to consumers, but this outfit has not given much evidence of ability to do the job.

So far as we can discover, none of the stuff which they have written on electric refrigeration has any real value to the prospective buyer.

Candid Camera Manual?

Perfection Mattress & Spring Co.
Crosley Radio and Refrigerator Distributors
831 North 24th St.
Birmingham, Ala.

Editor:

I read with a great deal of interest each week articles in the REFRIGERATION NEWS, but I enjoy particularly the pictures that you run, and the news-interest stories connected with them.

Being somewhat of a camera fan myself, I would appreciate a little information on just what type Candid camera that is being used; what stops are used, and the shutter speed at which these pictures are taken. I am using a Kodak Vollandia with F3.5 lenses. Most of the pictures I have taken as candid photos were with the lens wide open, and were one-second snaps. I have had pretty good luck, but your pictures are so much better than mine I would like to have details as to just how they are made.

F. M. JACKSON,
President.

Answer: Camera—Zeiss Contax. Lens opening—F1.5. Shutter speeds—1/25 to 1/2 second. See page 10, Sept. 5, 1934 issue; page 8, Oct. 31, 1934 issue; and page 8, March 6, 1935 issue of ELECTRIC REFRIGERATION NEWS for further details. The editor hereby serves notice that if these inquiries continue, he is going to write a manual on the subject and place it on sale.

Liked Aug. 7 Editorial

American Architect
572 Madison Ave., New York City

Editor:

As a subscriber to ELECTRIC REFRIGERATION NEWS, I am very much interested in your issue of Aug. 7. There are other implications in "that portion of vital statistics devoted to Marriage Licenses Issued" as you will see from our attached promotion piece.

As one of the first distributors of electrical refrigerators in the East, the old Kelvinator-Westchester in White Plains, I have always been interested in the industry and I feel that the new construction field is one which is, of course, of real importance both for refrigeration and air conditioning.

J. B. GREINER, JR.

Motor Panel Work

"The Shack"
Ashmead Drive, Ten Ashes, Rednal
Birmingham, England

Editor:

Have you a publication similar to the ELECTRIC REFRIGERATION NEWS dealing with fuse work, especially as applied to motor panel work or could you supply me with the name of a firm that does.

J. C. HODGE.

Answer: No.

"Please find enclosed 10 cents which I am sending and would like to have you send me the June 12, 1935, issue of the ELECTRIC REFRIGERATION NEWS. I have missed it about every week-end. I loaned it to a refrigerator salesman and he says he lost it, said he would get me another copy but to this date I haven't seen it yet. So if you have any copies of that issue please send me another."—Geo. V. Cronenwett, 235 Walker St., Gallion, Ohio.

"It is a pleasant feeling to secure 52 more issues of the NEWS and your two interesting books."—Jose Lopez Zuera, 256, Muntaner, Barcelona, Spain.

Sales Idea of the Week

By V. E. (Sam) Vining, Director of Department Store Sales,
Westinghouse Electric & Mfg. Co.

I walked into a store in Washington the other day and passing the stocking counter decided to buy a pair for my wife as compensation, perhaps, for the fact that I was going to spend the week-end at home.

The little girl who waited on me quoted me a price not only for one pair, but three pair.

I assured her I only had one wife and, therefore, needed but one pair of stockings.

She wrote out her sales ticket, started to carry the stockings to the wrapping counter, suddenly stopped and returning looked up at me and said:

"Please, may I give you some advice."

"Never buy only one pair of stockings—buy two pair just alike—because one of them will always get a run in it before the rest are worn out and by buying two pair you have really taken home three pair."

I bought them.

Then I realized that I had been a participant in a perfect sale.

I had been taught something about stockings—my wife had benefited. The sales girl performed a real service, and doubled her sales ticket.

I gave her a penny for being a good salesman.

—And went upstairs to the Major Appliance Department and advised the boys to go downstairs and take a lesson in selling.

Other Explosions Caused by Oxygen and Oil Revealed Following Chicago Blast

By George F. Taubeneck

NEW YORK CITY—News of the Mayfair Grill explosion in Chicago has brought to light the information that another oxygen-oil combustion accident occurred more than two months ago in a Voss carbon dioxide plant located in a municipal building near New York City.

Nobody was hurt in this explosion, but it did serve to make a point: drums containing oxygen, carbon dioxide, or a mixture of the two gases should each have dissimilar valve threads and charging connections. This suggestion has been made formally to the Refrigerating Machinery Association by Rudolph C. Becker and Casper S. Yunker of the Voss Ice Machine Works.

Here is how the accident is said to have occurred:

Eight drums of carbon dioxide had been ordered to recharge the system. This requisition went to a municipal central purchasing department, which in error supplied drums of a gas containing 95 per cent oxygen and 5 per cent carbon dioxide (which is a mixture used by hospitals for treatment of pneumonia patients—and which this central purchasing department had been sending to the city's hospitals).

Carbon dioxide cylinders are regularly painted battleship gray, whereas these drums (like all oxygen cylinders) were painted green. Moreover, the castings around the neck of these drums, investigation disclosed, were labelled "oxygen."

Nevertheless, the engineer in charge, finding that the valve threads of these oxygen drums fitted the carbon dioxide charge-in connections on the system, hooked them up.

After charging in part of a drum he noticed that the condensing pressure had mounted rather high, so he shut off the drum. Several hours later he again opened up the drum into the system. Immediately came the explosion, which wrecked the 8-in. brick walls of the machinery room, and opened flat the extra-heavy welded steel pipes of the condenser.

With the exception of stretching some studs, the vertical single-acting compressor was not damaged.

The engineer was thrown to the floor, and some oily waste which he had been holding ignited and burned his hands. Otherwise he suffered no injuries.

Voss engineers explain that in this circumstance the oxygen was compressed to about 70 atmosphere, the discharge temperature exceeding the flash point of oil. With the oxygen present this flashing oil instantly combined to form a gas with highly explosive pressure.

They Do It in the Navy

Midwest Engineering & Equipment Co.
617 Fulton St., Chicago, Ill.

Editor:

Note the enclosed form letter from the Frick Co. on using oxygen for test purposes in refrigerating machines.

They even do it in the Navy!
With all the other ways they have

at hand to get killed they must have among them a few "new dealers" that long for a change.

The new dealers have not yet tried oxygen to revive business, but if they don't have some experienced doctor around, business will blow up entirely and the new dealers with it. Somehow I feel that explosion is due soon.

THOS. McKEE.

(Editor's Note: The letter from Frick Co. is as follows:)

Frick Co.

Waynesboro, Pa.

General letter No. 1411

Erectors, Branch Managers, Salesmen, and Factors:

You have more than likely been informed of the explosion affecting the air-conditioning system installed in the Mayfair Grill at Chicago, details of which were published in July 24 issue of ELECTRIC REFRIGERATION NEWS.

A very similar explosion was reported in the newspapers last year, having occurred on one of the Navy vessels when testing the refrigerating system.

In both instances the explosion occurred due to the use of oxygen for test purposes. Either without knowledge of the reaction of oxygen with oil, or through forgetfulness, those connected with the installation (not the manufacturer's men) attached a drum of oxygen to the lines for the purpose of creating a test pressure. The oxygen immediately united with the oil, setting off the explosion.

The only safe bottled gas for test purposes is CO₂.

Never under any circumstances use oxygen for test purposes, and remember that oxygen must never be permitted to come in contact with either vegetable or mineral oil.

MILTON W. GARLAND,
Assistant Chief Engineer,
Ice & Refrigerating Machy. Dept.

Electromaster Introduces New Domestic Range

DETROIT—Electromaster, Inc., recently introduced a new domestic electric range—the KOB Waldorf—designed for use in homes where large oven and broiling capacity is required.

The new range has no surface units. The oven and broiling compartment are separate and each has a 4,000-watt heating unit. Capacity of the oven is 10,648 cu. in.

60 Indiana Salesmen Visit Kelvinator Factory

DETROIT—As a reward for making quota in a recent electric refrigerator campaign, 60 salesmen of the Northern Indiana Power Co. visited the Kelvinator factory here. Approximately 800 Kelvinators were sold by these men during the drive. William Smiley, merchandise manager, led the group on the factory trip.

Conditioning Extends Growing Season on Mushroom Farm

WHITTIER, Calif.—By making possible operations through the summer months, air conditioning has proved a profitable investment for the California Mushroom Farm here.

Before air-conditioning equipment was installed, the cool, moist air essential to successful mushroom culture could not be obtained within the growing houses when outside temperatures were hovering around 100° F. As a consequence, mushroom houses either had to be shut down during the summer, or operated at a considerable loss.

No small-time venture, the mushroom farm here uses 20 hollow-tile and plaster type houses as growing beds for its product. Each house has approximately 110,000 sq. ft. of growing surface, and an average of from 800 to 1,000 lbs. of mushrooms are gathered daily.

To attain best growth, the crop requires an inside temperature of 55° F., with extremely narrow variations allowable.

These conditions were provided by an air-conditioning system of cooling, washing, and circulating equipment, which, together with other plant machinery, totals a connected load of 97 hp. The installation uses about 10,000 gal. of water a day.

Owners of the farm declare that air conditioning adds three months per year to the mushroom growing season, as well as improving quality and yield during the entire year.

Operating costs have been comparatively low. Average cost of maintaining the system is about \$200 per month during the summer, and about \$50 per month during the winter. California Edison Co. engineers helped in making the installation.

TEMPRITE SUMMER SUCCESS PROMISES

A RICH WINTER HARVEST

★ Draft beer sales have climbed steadily since the first of the year. Volume now is 20% ahead of last year and will go much farther before the year is over.

★ During the summer weather, a large proportion of the dispensing was done in the lake resorts and outside gardens. But with the coming of the colder weather, these places close and the business returns to the indoor establishments.

★ Many new taverns are now opening and many more already in existence will install modern beer cooling equipment to handle their increased trade.

★ The outstanding success of Temprite during the hot summer weather will make it the first choice of the discriminating purchaser.

★ Investigate this market. With Temprite, it means increased Fall and Winter profits for you.



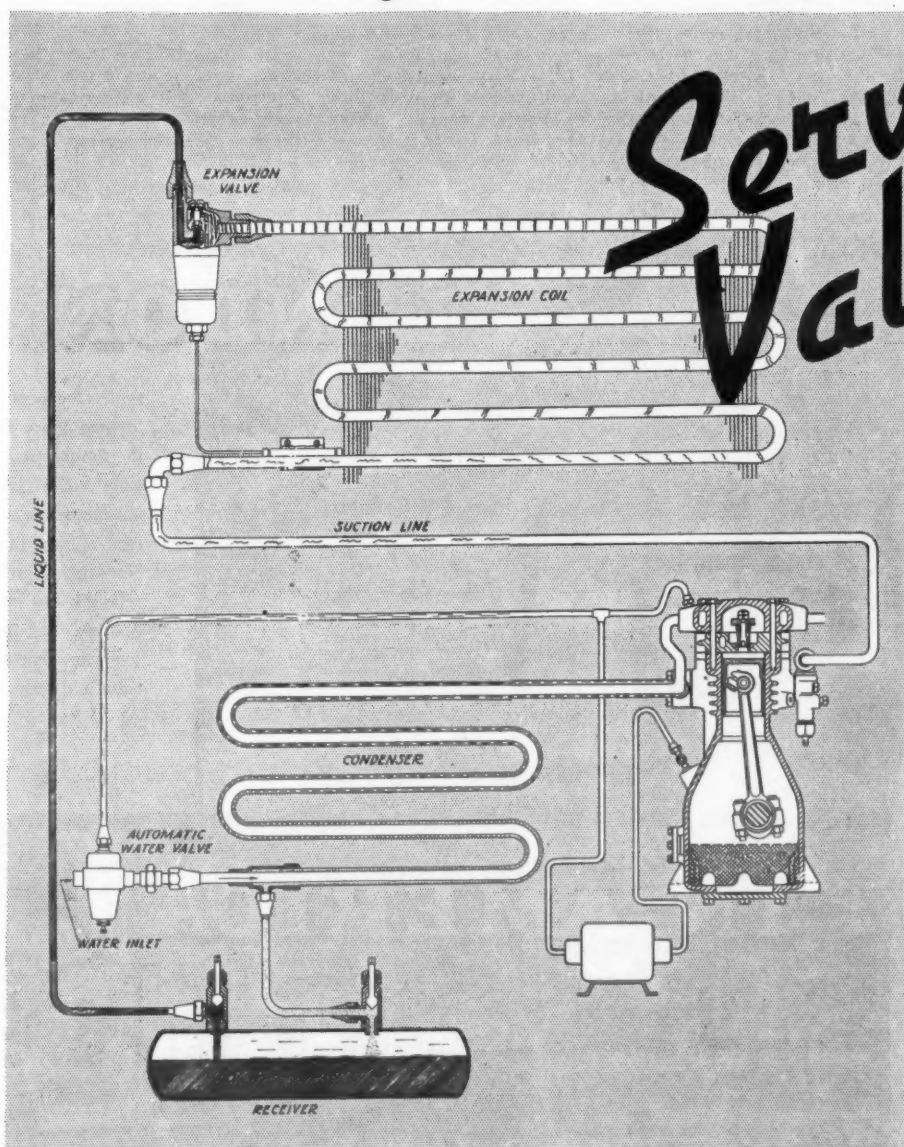
TEMPRITE PRODUCTS CORPORATION

1349 EAST MILWAUKEE AVE.

DETROIT, MICHIGAN

ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

PERFORMANCE . . . the Standard of Value in Condensing Units



Universal Cooler Condensing Units are adequately valved to permit repairs, adjustments or replacements to be made anywhere in the system easily and quickly—and the valves are dependable.

The convenience of service valves is neither new nor unique, but it is one of the many reasons why experienced refrigeration men like to use the Universal Cooler Condensing Unit.



UNIVERSAL COOLER CORPORATION

DETROIT, MICHIGAN

BRANTFORD, ONTARIO

MANUFACTURERS OF A COMPLETE LINE OF HOUSEHOLD AND COMMERCIAL REFRIGERATION

COMMERCIAL REFRIGERATION

Show-Boat Installs Cooling Equipment

CHICAGO—That "times may change but persons never" is indicated by the way Chicagoans flock to the Kelvinator-equipped Dixiana (said to be the only show-boat on the Great Lakes), to boo the villain who still pursues the innocent heroine in "Only a Shop Girl" and other old-time "melodramas." The show-boat is moored in the Chicago River at the Diversey Parkway bridge.

During intermission and after the show, visitors dance on the upper deck or stop in at the ship's bar for a sandwich and a refreshing drink. Kelvinator equipment includes a 1/4-hp. unit, which operates the bar in the Colonial Bar Room, and a 1-hp. unit, which operates a pre-cooler with a forced convection coil. A 7x7x3-ft. center icer with an ice-making coil is also used.

Three more Kelvinator units of 1/4-hp. each will soon be installed in the Robert E. Lee private dining room, for deck service in the pilot house, and to operate two draft arms for beer.

Cooling equipment was sold to the Dixiana by H. W. Sturgeon, commercial salesman for Commonwealth-Edison Co., Kelvinator distributor here. The show-boat is managed by J. M. Weller.

York Equips Alaskan Relief Colony

PALMER, Alaska—To preserve freshness of meats, vegetables, and dairy products in the milder season here, the Federal Emergency Relief Administration is having a refrigerating plant installed in this town, community center of the Alaskan colonization project in the Matanuska Valley district.

The refrigerating equipment consists of a York 3 in. x 3 in. double cylinder ammonia compressor, driven by a 5-hp. motor. Equipment serves spiral finned coils in four rooms.

Five Cold Rooms Made In Plant of Buffalo Sausage Company

BUFFALO—A. Szelagowski & Son, sausage manufacturer here, recently erected a new plant equipped with five cold rooms refrigerated by Frick machines and insulated with Armstrong corkboard.

The plant consists of three sausage meat coolers measuring 20x25x10 ft., one sausage storage cooler 30x30 ft., one refrigerated display room and shipping room 25x70 ft., and a 6-ton ice plant.

The meat cooler is insulated throughout with 5 in. of Armstrong's corkboard, the wall insulation being installed in accordance with Armstrong's asphalt specifications. Its construction is typical of the other rooms.

Corkboard on the ceiling was erected against two layers of 1/2 in. T.G. sheathing, with insulating paper in between. The corkboard floor insulation was flooded with asphalt before a wearing surface of concrete was installed.

The finish of the ceiling of the meat cooler is plastic emulsion applied in two coats and painted with aluminum paint. Walls were finished with Portland cement plaster and painted.

Kold-Hold Refrigerates Ford Ice Cream Trucks

WASHINGTON, D. C.—The Carry Ice Cream Co. here keeps its cargo hard and cold throughout the day by using Kold-Hold refrigerated Ford V-8 trucks for delivery purposes.

The units are chilled the night before to a temperature of 15° below zero by means of a 1-hp. compressor. The truck is insulated with 6 in. of Armstrong's corkboard in the floor, and 6 in. of Dry-Zero in the walls, ends, and roof of the refrigerated section.

15 Refrigerators Are Placed in White House Kitchens

WASHINGTON, D. C.—In keeping with the country-wide home modernization program, 15 pieces of refrigeration equipment ordered from the Edgar Morris Sales Co., Westinghouse distributor here, will be installed in the White House kitchen, now being modernized.

Refrigeration equipment will provide adequate preservation for anything served at the White House from a State dinner to one of the President's trays. Equipment to be installed is as follows:

Three AP-130 refrigerators; one DLX-95 refrigerator; one DP-78 refrigerator; one DC-20 refrigerator; one ice maker; two 58-cu. ft. cabinets with WFC-75 compressors; one fish box with CAF-16 compressor; one MT water cooler; one 6-hole ice cream cabinet with AFB-3-H compressor; one 4-hole ice cream cabinet with ASB-25-H compressor; one CWF-1501 compressor with forced draft unit for cold storage room; one 130-cu. ft. cabinet with two forced draft units, and one CWF-1001 compressor.

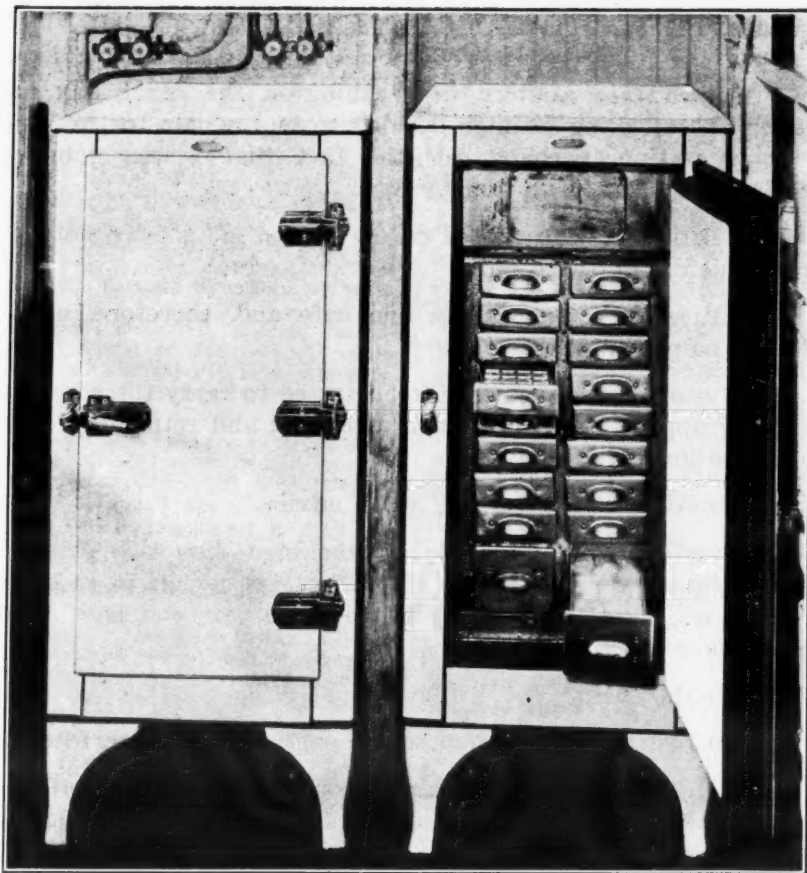
The six refrigerators serve the main kitchen and pantries, and range in size, as may be seen above, from three AP-130's to one of the chest models. The ice cream cabinets are large enough to take care of Mrs. Roosevelt's mammoth teas. The fish box accommodates the President's "catch" when he returns from a fishing trip. The ice maker is designed to assure enough ice cubes for use at any hour of the day or night.

Since the White House kitchen feeds not only the President's family, household staff, official family, and out-of-door servants, but also those invited to elaborate functions, it was decided that a hotel kitchen in miniature was needed to care for the needs of a family whose monthly food bill often runs to \$2,500.

This year, while the building was being remodeled, was the logical time to "do over" the kitchen and rewire the basement for alternating current to replace the direct current introduced some years ago.

In addition to installing refrigeration equipment, the Westinghouse company has received orders for a.c. motors for replacing the present d.c. motors on the air-conditioning equipment, and a 20-kw. motor generator set.

Marine Installation



Fedders ice cube making refrigerators are now installed on three famous Hudson River night boats in the manner shown above.

10 Fedders Ice Cube Makers Installed on 3 Hudson River Night Line Boats

NEW YORK CITY—The Hudson River Navigation Corp. has equipped three of its Hudson River Night Line boats with 10 Fedders ice cube making refrigerators operating with York condensing units. Installation was made by the Brooklyn branch of York Ice Machinery Corp.

Four refrigerators were installed on the S.S. Berkshire, flagship of the fleet, and three refrigerators each on the S.S. Rensselaer and the S.S. Trojan.

Two of the units on each ship are located in a small service pantry adjacent to the dining salon at the aft end of the ship. These refrigerators are connected in multiple to a York condensing unit using Freon.

The other units are installed one deck above to supply ice cubes for room service. Refrigerant control for all models is by Fedders model 33 thermostatic expansion valves.

Output of ice cubes for each refrigerator is 576 cubes per freezing.

24,000 Bottles of Coca-Cola Sold in 8 Months In Kentucky Town of 2,225 Residents

MAYFIELD, Ky.—Despite liquor repeal privileges, Kentuckians in the territory served by the United Market, grocery store here, have consumed 24,000 bottles of Coca-Cola, cooled by a Crosley Koldrink commercial refrigerator, during an eight-month period, reports Neil Bauer, Crosley field sales manager.

This record meant that the 2,225 residents (total population) of this town had few hangers, the Coca-Cola had a rapid turnover, and the beverage cooler did an outstanding job, Mr. Bauer holds.

When told of the record sales made

by this business concern, Mr. Bauer doubted the accuracy of the figures and set out to investigate. He found them to be true.

L. L. Landin, owner of the store, when queried as to what he attributed his record sale of cold drinks, said:

"Last July we installed a Koldrink and our bottled drinks have doubled in sales. In addition to having satisfied customers boost our sales, we ran an advertisement headed with our name, stressing the record sale, and stating the type of refrigeration which was used to keep the drinks cool."

Milk Cooler User Tells Importance of Properly Refrigerating Milk on Farms

BELOIT, Wis.—That modern electric refrigeration equipment is becoming more important daily to dairy farms is substantiated in a letter recently received by General Refrigeration Sales Co. from a Lipman user in Plato Center, Ill. Said the user:

"I believe my milk ranks at the top at the Plato Center milk plant. The city of Chicago is now investigating to see if the Chicago milk shed requirements are being met by pro-

ducers. The investigator who came to my farm yesterday was very complimentary as to the way the milk is being cooled. Your field organization should get into the territory to sell installations like this."

General Refrigeration Sales Co. officials point out that in many cities local legislation has been passed specifying that Grade A milk must be brought down to 50° in one hour after milking.

Kold-Hold Designs 'Half-and-Half' Trucks for Use in Carrying Loads of Two Types

LANSING, Mich.—For the transportation of mixed loads, some portion of which requires lower temperature than the remainder, many firms are using Kold-Hold truck installations of the "Half and Half" type, that is, trucks with the rear compartment refrigerated and the front compartment non-refrigerated, declare officials of the Kold-Hold Co.

In one design, the rear refrigerated compartment carries temperatures below 50° and the front non-refrigerated compartment temperatures below 85° with outside temperatures

of 105°, and does this with a minimum of equipment and loss of space.

Refrigerating equipment consists of a Kold-Hold unit and accessories and a 1/2-hp. condensing unit. Refrigerants are methyl chloride, Freon, or ammonia.

Where an individual body or fleet is to be operated from a fixed base, the system may be refrigerated from a condensing unit located in the garage, or by connecting to the central ammonia plant, with the Kold-Hold M & B valve-union of the proper type.

Rex Refrigeration Co. to Distribute Lipmans

LOVINGTON, Ill.—Rex Refrigeration Co., owned and operated by Rex A. Boggs of this city, has been appointed distributor of Lipman refrigeration equipment in central Illinois by the General Refrigeration Sales Co., Beloit, Wis.

Muskegon Coca-Cola Plant Installs Uni-Temp Tank

MUSKEGON, Mich.—The Coca-Cola Bottling Plant here installed a model 503 Lipman refrigeration unit and a Uni-Temp tank last spring. The manager of the plant states no service has been required since the equipment was installed.



LONDON . . .

thinks this is quite the topping place to buy the family dinner. To Englishmen it's the most modern...up-to-date market in town. No wonder profits to retailers are smaller. Spoilage and unappetizing display cuts both sales and profits.



...BUT IN AMERICA

thanks to Weber merchandizers and engineers, these new non-fogging, service-free Weber cases increase sales and profits at an astonishing rate.

Progressive distributors are making more sales and profits with this advanced line.

Write today for full details.



WEBER

BOXES & REFRIGERATORS

WEBER SHOWCASE & FIXTURE CO. INC.
5700 AVALON BLVD...LOS ANGELES CALIF.

McCray Outlines Methods for Specifying Commercial Refrigeration Machine For Various Applications

Factors in gauging the capacity of the unit in specifying a commercial refrigeration machine for a particular application are outlined in a manual prepared by McCray Refrigerator Sales Corp.

Compressor capacity, says the manual, varies to different extents with changes in the following conditions:

A. Suction or back pressure maintained.
B. Temperature of cooling medium (air or water as the case may be).
C. Freedom of air circulation on air-cooled jobs.

D. Distance from coil to compressor.
Faulty operation due to any cause will naturally affect the compressor capacity, but in general if the compressor is installed in accordance with the installation rules, the above four items will be the only factors entering into this discussion.

In all installations, according to the manual, it is necessary to have for best operation:

A. As high a suction or back pressure as it is possible to maintain.
B. Temperature of air or water for cooling as low as possible.

C. Unrestricted free air circulation about compressor.

D. As short a distance as possible from the compressor to the coil.

Of these four items, the first and second are by far the most important and should be given first consideration.

The suction or back pressure that a normal operating compressor will "pull" depends entirely upon the cooling coil, and its application. It is for this reason that it is far more advantageous, within certain limits, to have too large a coil than one that is too small.

The larger coil, of course, allows a higher suction or back pressure to be maintained. Coils specified in McCray equipment are, for this reason, as an average larger in capacity than the usual installation specifications.

Actual temperature readings have shown that the temperatures in the basement of a market are usually

10° to 25° less than the temperature within the store. It is for this reason alone that a compressor located in the basement of a market will usually give much better results than one located on the market level, providing that an excessive length of tubing does not have to be run to allow the compressor to be installed within the basement.

Installation of the compressor in a cool location, such as the basement to obtain more efficient operation characteristics, will be overcome if the cool air is not given an opportunity of free circulation through the condenser.

Experience and laboratory tests have shown that the average "on" cycle suction or back pressure that will usually be obtained if the coil and compressor are correctly specified is 11 to 12½ lbs. methyl chloride. This is obtained with the usual pressure setting of 8 to 10 lbs. cut-out pressure to 27 lbs. cut-in pressure methyl chloride.

The compressor sales manual gives the hourly capacity for each of its compressors at different suction or back pressures. The room temperature in which the compressor is located for this table is comparatively hot—95°. It must be understood, says the manual, that the capacities as listed are for continuous compressor operation for one hour. Although a good compressor is capable of maintaining continuous operation conditions for many hours, it is not advisable for several reasons that a compressor be chosen that would require continuous operation or anything like it.

In the first place, the heat leak as calculated may have a considerable error, and it is also quite probable that more or less of the hottest summer days will exceed 90° temperature on which the heat loads were figured. It is for these reasons that a reserve capacity must be given to each compressor specification.

Hourly compressor capacities listed in sales manuals are generally multiplied by 16 to obtain the allowable daily capacity.

Dickerson Licensed to Use Kold-Holds in Cream Cabinets

NEWARK — Under a recently executed contract, the Dickerson Co. of this city has been licensed to employ the Kold-Hold system of refrigeration as an integral part of their evaporator units for new ice cream cabinets, or for replacement in cabinets formerly employing a brine system.

Dickerson Kold-Hold evaporator units, as they will be known, are made of sheet steel, spot-welded, with no liquid surrounding the all-steel evaporator.

The only liquid employed is contained in the Kold-Hold section which is welded to the outer sidewall of the evaporator itself.

Dickerson claims that this system maintains exceptionally uniform temperatures and that operating costs are lower.

It is also claimed that there is considerable saving of space with

these units as compared with a cabinet using a brine system.

According to officials of the Dickerson Co., all parts of the old refrigeration system are interchangeable and may be re-employed when converting an old cabinet. Any type of refrigerant will work with these units, and any metering device (low side float valve, high side float, or expansion valve) may be used.

'Liftops' Purchased for Deluxe Tourist Camp

SAN ANTONIO, Tex.—Lon P. Piper, owner of Grande Court, deluxe tourist quarters here, has purchased 50 "Liftop" refrigerators for the tourist camp suites from Electric Household Appliances, Inc., General Electric distributor for this territory. C. F. Smith and C. R. Hull made the sale.

Mr. Piper may install 22 more LK-1 refrigerators, G-14 ranges, and G-E water heaters in his apartment-tourist camp building, declares W. I. Wilt, advertising and sales promotion manager of the Texas distributorship.

Counter Freezer Users Enrolled as Members Of Association

CHICAGO—The National Association of Counter Freezer Manufacturers here has inaugurated a campaign to enroll users of counter freezers and the allied industries as associate members.

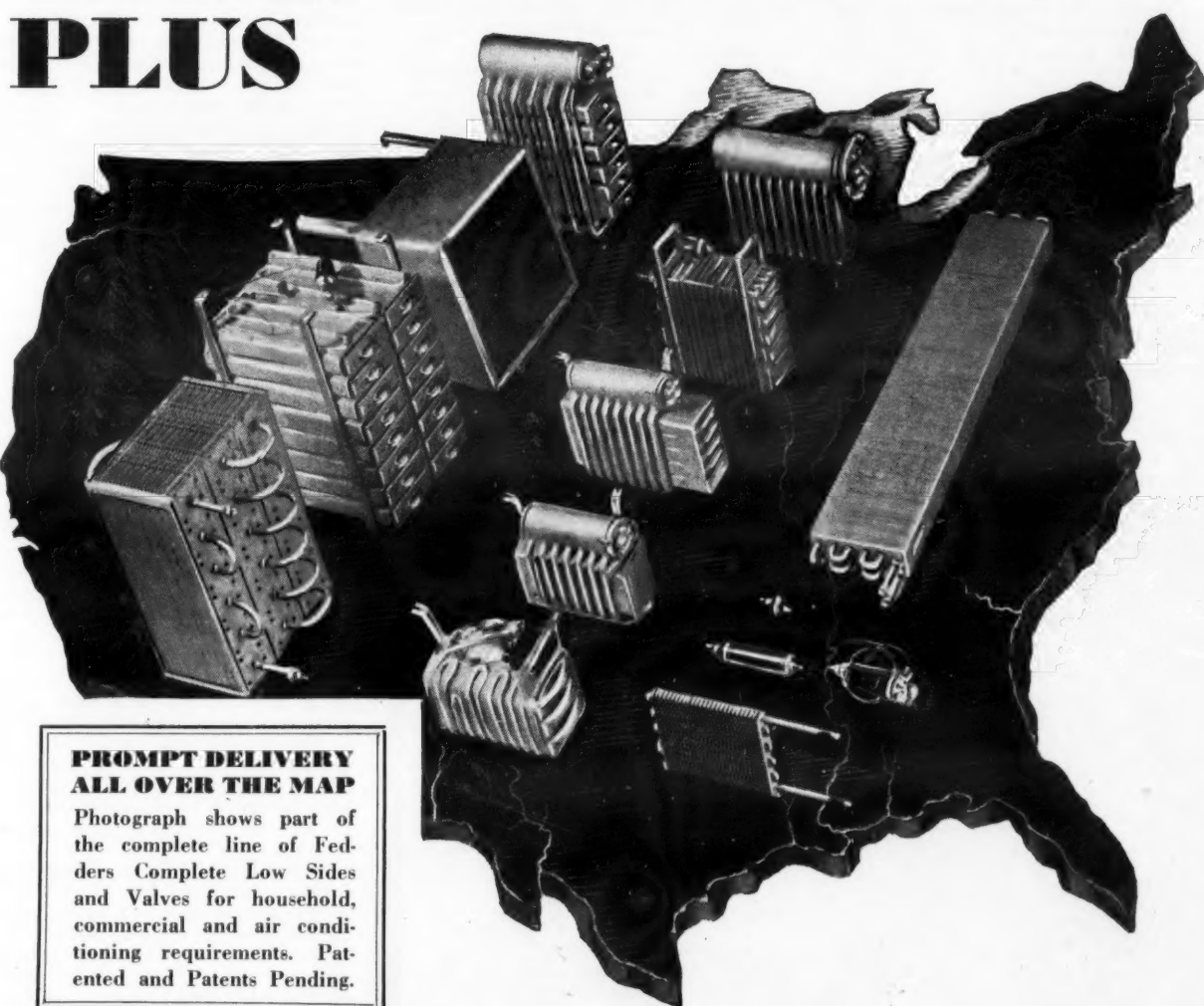
Users in each state will comprise a state association for cooperation in fighting adverse legislation and securing the adoption of model rules and regulations in every state and city.

Associate members will receive a complete merchandising and promotional service and helps in operating their "own made" ice cream departments. One of the organization's first activities will be the issuance of a four-page house organ and the reprinting of the booklet "The Story of the Counter Freezer," containing full information regarding the use, operation, and merchandising of products of counter freezers.

Chicago headquarters for the association are in the Pure Oil building.

FEDDERS complete line of complete low sides and valves

PLUS



PROMPT DELIVERY ALL OVER THE MAP

Photograph shows part of the complete line of Fedders Complete Low Sides and Valves for household, commercial and air conditioning requirements. Patented and Patents Pending.

these **FEDDERS** branches and distributors give you what you want where and when you need it

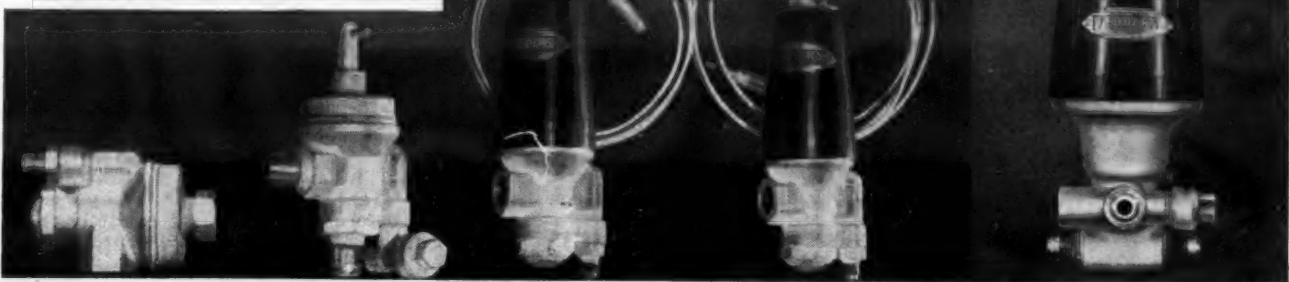
BALTIMORE, MD.
Melchior, Armstrong, Dessau Co.
BOSTON, (CAMBRIDGE), MASS.
Melchior, Armstrong, Dessau Co.
BRIDGEPORT, CONN.
Parsons Bros.
BUFFALO, N. Y.
Fedders Manufacturing Co.
Beals, McCarthy & Rogers
Root-Neal & Co.
CHICAGO, ILL.
Fedders Manufacturing Co.
Harry Alter Supply Co.
H. W. Blythe Co.
Borg-Warner Service Parts Co.
George Moonjian
Utilities Engineering Sales Co.
CINCINNATI, OHIO
Fedders Manufacturing Co.
Merkel Brothers Co.
CLEVELAND, OHIO
Debes & Company

DALLAS, TEXAS
Fedders Manufacturing Co.
Beckett Electric Co.
DENVER, COLO.
Auto Equipment Company
DETROIT, MICH.
W. C. DuComb Company
FERNWOOD, MISS.
Enochs Sales Company
GREENSBORO, N. C.
Home Appliance Service Co.
HOUSTON, TEXAS
Walter Refrigeration Supply Co.
D. C. Lingo Company
KANSAS CITY, MO.
Nash & Company
LONG BEACH, CALIF.
Allied Refrigeration

LOS ANGELES, CALIF.
Fedders Manufacturing Co.
National Refrigeration Products Co.
Franklin G. Slagel
LOUISVILLE, KY.
Geo. Dehler, Jr. & Co.
MEMPHIS, TENN.
Lewis Supply Co.
MINNEAPOLIS, MINN.
Refrigeration & Industrial Supply Co.
NEW ORLEANS, LA.
Enochs Sales Co.
NEW YORK CITY
Fedders Manufacturing Co.
Melchior, Armstrong, Dessau Co.
Acta Supply Co.
PHILADELPHIA, PA.
Melchior, Armstrong, Dessau Co.

PHOENIX, ARIZ.
R. R. Reynolds Co.
PITTSBURGH, PA.
William M. Orr Co.
PORTLAND, ORE.
Stone Supply Co.
Refrigerative Supply, Inc.
Refrigerator & Power Specialties Co.
SAN ANTONIO, TEXAS
Strauss-Frank Co.
SAN FRANCISCO, CALIF.
California Refrigerator Co.
Refrigerator & Power Specialties Co.
SEATTLE, WASH.
Refrigerative Supply, Inc.
Refrigerator & Power Specialties Co.
SPOKANE, WASH.
E. S. Matthews, Inc.
Electric Refrigeration Company
Refrigeration Parts Supply Co.
ST. LOUIS, MO.
The Spangler Company
VANCOUVER, B. C.
Fleck Bros., Ltd.

LEFT TO RIGHT: Automatic Expansion Valve, Constant Pressure Valve, Model 33 Thermostatic Expansion Valve, Model 33-HC High Capacity Thermostatic Expansion Valve, Two-Temperature Snap Action Valve, (Check Valve not shown). Patented and Patents Pending.



FEDDERS MANUFACTURING CO.

57 TONAWANDA ST.

BUFFALO, N.Y., U.S.A.

ARE YOU GETTING YOUR COPY OF THE FEDDERS NEWS?

Distributor Shows Line At County Fair

BAY CITY, Mich.—By sending letters of invitation to logical prospects, George F. Dent, Kelvinator distributor here, made doubly sure that all possible buyers would see his display in actual operation at the recent Bay City Fair.

The display included several domestic models, a bottled beverage cooler, a portable bar, a floor-type air-conditioning unit, a milk cooler, and an Aerator.

"People will always stop to look at something that moves, and a display of equipment in actual operation gains the genuine interest of prospects," claims Mr. Dent.

Letters of invitation to inspect the beer-cooling equipment were sent to owners of beer gardens and taverns. Cards were enclosed entitling bearers to a glass of Kelvinator-cooled beer at the exhibit. Approximately two-thirds of the cards sent out were presented at the bar.

Dairy farmers were invited to inspect the milk-cooling equipment. Letters from satisfied users (dairies near Bay City already equipped with Kelvinator), were displayed on the walls of the exhibit.

The air-conditioning unit was fitted with glass panels to show the inside.

Baltimore School Opens Refrigeration Course

BALTIMORE—Third session of the United School of Refrigeration, headed by Carroll W. Thurlow, Jr., of United Radio & Refrigeration Service Co., will begin the latter part of September.

Keeping Pace

OUR engineering staff is continually alert to improve the line of ACE HARD RUBBER DOORS, RAILS, JAMBS and other parts for Display Refrigeration Equipment. Manufacturers look to us for standard products and dependable service. They get it.

A complete catalogue will be mailed to manufacturer who wishes to consider Ace products and Ace service.

AMERICAN HARD RUBBER CO.
11 MERCER STREET, NEW YORK, N. Y.
Akron, O. • 111 W. Washington St., Chicago

Herrick Shows Model Market at Meeting Of Iowa Grocers

WATERLOO, Iowa—A model meat market, stocked and operated by the Rath Packing Co., was built in the lobby of the Hotel Russell-Lamson by the Herrick Refrigerator & Cold Storage Co. for the Iowa Retail Grocers & Meat Dealers Association convention held here recently.

Herrick equipment included in the display consisted of one model 2410 10-ft. double-duty case, with diffusion-type coils; one model 3506 6-ft. double-duty, three-shelf display, with diffusion coils; and one model PF-486 walk-in cooler, with a flash-type coil.

Equipment was refrigerated by a York 1-hp. air-cooled machine using Freon. The machine was installed, complete with coil in the cooler, by the Hartlep Equipment Co., York distributor for northeastern Iowa.

Loaf and fresh cut meats were displayed in the cases, and heavy carcass cuts of beef, veal, lamb, and pork in the walk-in cooler. Meat display was furnished by the Rath Packing Co., Waterloo.

Other equipment furnished was as follows: meat block and special tool rack, installed by the Herrick company; Toledo Plastikon scales, by the local Toledo Scale Co. representative; and a National Cash Register, by the local N. C. R. agency.

Uses of Products Told in Empire Publication

MANSFIELD—First issue of "The Empire Sheet," an eight-page magazine devoted to sheet steel products, has just been published by the Empire Sheet & Tin Plate Co. here.

The publication contains a number of articles on the various uses of the company's sheet steel products in industry, including motors, fans, generators, and other electrical equipment, stoves, and kitchen utensils.

Among the company's products is included Wabik Metal, a vitreous enameling sheeting designed especially for use on electric ranges, refrigerators, washing machines, and commercial refrigeration equipment.

Features claimed for this material are drawing quality, uniformity in production, processing, and uniform response to heat changes.

The magazine also contains the first of a series of articles on the process used in the manufacture of Empire sheets, in which the method of charging the furnace and tapping a sample are described.

COMMERCIAL REFRIGERATION

Brown Explains Factors Involved In Design of Water Coolers

By Arthur R. Brown, Refrigeration Engineer,
Westinghouse Electric & Mfg. Co.

Five water coolers designed with an eye to high cooling capacity, ruggedness, and pleasing appearance were developed by Westinghouse this year.

These five water coolers have the following chief characteristics:

Model	Gal. Per Hr. 80° to 50°	Hp.	Condensing Medium	Current Characteristics	Refrigerant
FWP-14	14.4	3/4	Water	110 volts, 60 cycles	F-12
FWP-8	7.6	3/4	Water	110 volts, 60 cycles	F-12
FWP-65	6.2	3/4	Water	110 volts, 25 cycles	F-12
SP-4	4.0	3/4	Air	110 volts, 60 cycles	SO ₂
FPO-30	3.0	3/4	Air	115 volts, d.c.	F-12

In external appearance, all models are alike except for the lower rear panel, which is plain for the water-cooled models, and louvred for air-cooled models. All models except the FPO-30 are equipped with Westinghouse hermetically sealed compressors, similar to those used on the domestic refrigerators. A high side float system is used with these compressors.

Open-Type Refrigerating Unit

The FPO-30 has an open type refrigerating unit, the compressor being driven by a V-belt from a direct current thermoguard motor; an automatic expansion valve is used.

High compressor capacity is obtained in the FWP models by the use of Freon (F-12) as a refrigerant. This high unit capacity can be used economically only by having sufficient heat transfer surface in the cooling chamber.

The cooling chamber is a nickel plated and polished, brass 1 1/2 gal. container, surrounded by a steel jacket. The refrigerant is evaporated in the space between the jacket and chamber. In this form, the heat transfer surface is sufficient for a 3/4-hp. unit and results in a balanced design for the SP-4 cooler.

Additional surface is required to load the FWP coolers and this is provided by a coil of copper tubing sweated to the exterior of the refrig-

erant jacket. The incoming water passes through this coil before reaching the cooling chamber. A large percentage of the water cooling takes place in this coil, causing the suction pressure to be high, thus taking advantage of the high unit capacity.

The main cooling chamber completes the cooling of the water and affords a reserve capacity of cooled water for sudden high demands.

A problem in high capacity units is to effectively limit motor temperatures by suitable cooling. With air cooling of the motor the maximum ambient temperature must be limited to obtain satisfactory results. This factor is usually not controllable within the desired range, so water cooling was adopted for the FWP models.

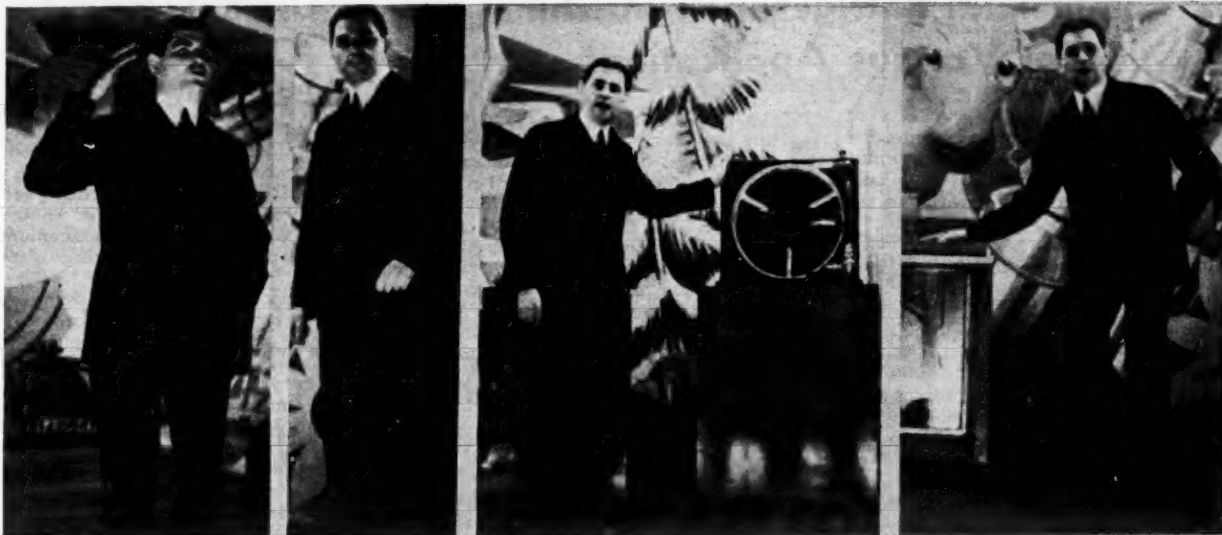
Motor Cooled by Drain Water

The motor shell is surrounded by a coil of copper tubing, through which the outlet water from the condenser passes. By this means, under the most severe of conditions normally encountered, the winding temperature is held well below the safe operating limit.

The condenser of the water-cooled units is of the counter-flow, double-tube type. Condensing water flow is regulated by an automatic valve, which holds a constant discharge pressure when the unit is running and stops the flow of condensing water when the unit shuts down. The discharge pressure setting of this valve is adjustable to obtain economical cooling water consumption for inlet temperatures encountered.

Sulphur dioxide is used as a refrigerant in the air-cooled model SP-4,

'You Can Sell Commercial Jobs This Fall'—Quigley



C. E. Quigley of Frigidaire's commercial refrigeration department is telling salesmen that increased farm income and improved general business conditions should make the market for commercial refrigeration equipment this fall the best in years.

since this not only provides the best balance between the unit and cooling chamber but also limits the winding temperature to a safe maximum. In this cooler the air is brought in at the base of the cooler and is forced through a finned tube condenser by a fan. The air then passes up through the motor-compressor compartment and out through louvres in the cooler lower rear panel.

Fins are attached to the motor shell to assist air cooling. The natural tendency for warm air to rise is thus followed throughout the air passage through the cooler. The louvres in the rear panel direct the exhaust air upwards to avoid recirculation.

Air Circulation

A cooling system similar to that of the SP-4 is used on the FPO-30. In this cooler the motor is suspended directly below the compressor, the center of gravity being in the same vertical plane as the center of inertia. The cooling fan is mounted directly on the motor shaft and the air, after passing through the condenser and over the motor, is driven up over the compressor and out through the rear louvres.

Louvres to direct the inlet air are also provided on this cooler, as the condenser is located much closer to the rear panel than is the case with the SP-4. Water temperatures are maintained by a seven-point selective temperature control to regulate the operation of the condensing unit. This control is similar to the one used on Westinghouse domestic refrigerators, but has been modified in some details to adapt it to the water-cooling range of temperatures.

It consists of a set of toggle-action contacts actuated by a power bellows. A refrigerant charged bulb, connected to the power bellows, is located in a well in contact with the refrigerant chamber shell. This system is similar to the one found on previous Westinghouse coolers.

Vibration Reduced

Vibration is held to a very low value on the hermetic models by mounting the compressor-motor unit on compression springs. The 60-cycle motors operate at 1,750 r.p.m., and the 25-cycle motor at 1,425 r.p.m. The compressor and motor of the FPO-30 cooler are mounted on a welded support structure, suspended from the frame by tension springs. It has been possible in this cooler to obtain a comparatively high percentage of vibration damping for an open type unit.

A difficulty to be guarded against in water coolers is water or refrigerant leakage in the cooling chamber and connections. Other materials than brass for the cooling chamber which are non-corrosive, such as stainless steel or aluminum, present severe welding or soldering difficulties to obtain a leak proof and mechanically strong joint. The bursting tendencies of water hammer and freezing must also be guarded against.

Design of Cooler Chamber

After extensive laboratory tests, a design was adopted for the chamber of the coolers of a brass shell and bronze head, reinforced by a steel ring at the head and shell joint, which, with silver soldering, provided an assembly stronger than welded stainless steel or aluminum and much less subject to welding or soldering defects in assembly.

This assembly will withstand internal pressures of 450 lbs. per sq. in. before deforming and heads have had the joint rolled out by pressures of 500 lbs. per sq. in. before developing a leak. Silver soldering is used throughout the cooler for tubing joints and for attaching the steel jacket to the brass cooling chamber shell.

Method of Relieving Pressure

Special provisions are made in the coolers to relieve pressures in the cooling chamber and tubing caused

by freezing. While freezing is an infrequent occurrence, a defective temperature control adjustment may at times have this result.

In this event, in the FWP models, the water precooling coil described earlier in this article is the first to freeze, closing off the cooling chamber from the supply line. The ice then builds up on the walls of the chamber. The inlet tubing remains open until the chamber is almost completely frozen, so a capillary connection is provided from the inlet to the line leading to the self-closing valve.

Pressures inside the chamber are relieved through this capillary tube and at 200 lbs. per sq. in. raise the self-closing valve off its seat and are vented through the bubbler. The chamber remote bubbler outlet or cleanout drain, which is normally closed at its end except when a remote bubbler is used, is sealed by a pressure relief plug, having a thin disc which will rupture at pressures well below the bursting limit of the tubing. This plug is not required when a remote bubbler is used, as this will relieve the pressure in the same manner as the unit bubbler.

A trouble frequently encountered in water coolers is drain stoppage, especially when a precooling is used. In the new Westinghouse coolers, a special effort was made to have the drain direct and free from encumbrances which might cause stoppage.

The drain line is of 3/4-in. copper tubing and passes from a smooth sub-basin, below the top, directly to the outlet connection of the cooler. The sub-basin has a gasketed fit with the top to avoid leakage at this point. Sweating of the drain line is avoided by locating it inside the insulated water-cooling compartment for the majority of its length.

Ease of Servicing

An important consideration in any refrigerator is ease of servicing. Parts requiring servicing are located so as to have as easy access as possible. The temperature selector and bubbler regulator adjustments are accessible from the rear of the cooler on the outside. The condensing water regulator, the temperature control mechanism, and the float chamber (for float lifting, purging, or high side pressure readings) are easily reached by removing one or the other of the two rear panels.

These panels are slotted where the water connections pass through so it is unnecessary to break these connections to remove the panels. The top and cabinet are easily removable to provide access to the interior of the cooler for any other inspection or servicing.

In the new line of coolers, lightness and strength have been achieved in the frame design by the use of a welded angle structure. The main supports are two 1 1/2-in. steel angles, bent to an inverted U shape by notching and welding the corners. Cross angles form compressor and motor supports, the condenser and other unit details also being located on these cross members.

Frame Construction

The frame extends approximately two-thirds the height of the cooler, and the cooling chamber rests on top of the inverted U angles, mounted on a steel support plate. The chamber is firmly attached to this plate, and insulated from it by three hardwood blocks.

A cylindrical steel container surrounds the cooling chamber, a 2-in. space between being packed with ground cork insulation. At the top of the insulation container, a weatherwood cover provides mechanical support and insulation for the water outlet tubing. All joints in the container are flooded with hydrolene to seal the insulation against moisture infiltration.

Weatherwood Cover

The use of weatherwood for a cover instead of steel not only provides

better insulation of the outlet connection, but also makes possible a much stronger joint at the container edge for the hydrolene seal, the full thickness of the cover having sealing contact with the container and outlet tubing.

Outside the insulation chamber, the outlet tubing is insulated with sponge rubber tubing to avoid heating of the cooled water in this tubing and moisture condensation on the tubing surface.

Cabinets are of sheet steel, finished with two coats of baked black Dulux enamel. The front and sides are formed in one piece, with rounded corners. Two removable panels enclose the rear of the coolers. The top is formed from 18-8 stainless steel, satin finished and has its corners rounded to carry out the streamline effect of the cabinet. The top overlaps the top edges of the cabinet to give protection from wear.

Parker Uses Trunk-Type Pistons in New Units

(Concluded from Page 1, Column 3)

ant expands into the bottom of the aerator through a thermostatic expansion valve. For methyl chloride, the suction pressure is set at 14 to 18 lbs. gauge pressure. This will give an evaporating temperature inside the aerator ranging from 20° to 26° F.

The compressor operates continuously during the milking period, the suction pressure being controlled by the thermostatic expansion valve. About 15 minutes before the milking period is over, the refrigerant is shut off from the aerator by closing the hand valve between the thermostatic expansion valve and the aerator, and the compressor is allowed to pump all the refrigerant out of the aerator.

The pressurestat on the condensing unit is set to start the motor when the milk starts over the aerator, and to run continuously until the milk stops flowing, at which time the pressure automatically stops, due to the lowering pressure on the aerator.

French Are Interested in Air Cooling, Says Servel Agent

EVANSVILLE, Ind.—The rapid growth of the air-conditioning industry in the United States is attracting considerable attention among French business men, and a potential market for American-made equipment is seen by H. F. N. Van Heffen, Servel distributor for France, who recently visited the Servel plant here.

While climatic conditions in France are not as favorable toward air-conditioning sales as those found in most sections of the United States, Mr. Van Heffen believes that a fair volume of business may be obtained through aggressive sales effort.

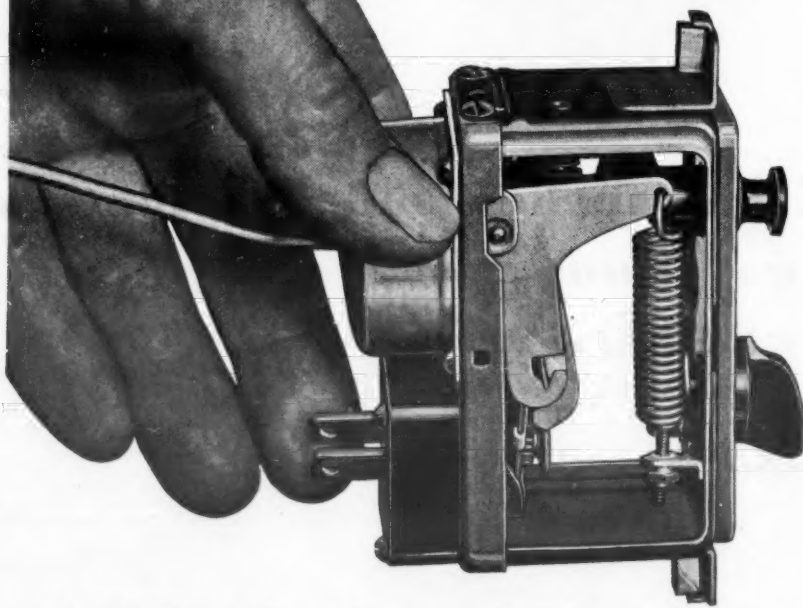
Mr. Van Heffen, who has represented Servel in France for more than six years, stated that commercial refrigeration sales of his firm have shown an exceptional increase this year.

Increased Production in Heavy Industries Aids English Business

DETROIT—"Despite the two million people still on the dole, definite improvement in business is seen everywhere in England due to increased production in the heavy industries," states Ralph Searle, managing director of Kelvinator, Ltd., London, England, who is visiting the Kelvinator factory here.

"Demand for goods manufactured by the lighter industries is bound to follow shortly, because of the increased purchasing power of those employees in the heavy industries," he believes.

FIELD TESTS



A CAREFUL check on a thermostat in the field is the best way to determine its quality.

The Rancostat has had months of field tests. To find out what service station managers think of it, a careful check was made, including thousands of Rancostats. This check completely verified the reports from our own carefully conducted laboratory tests. Everywhere, service station managers told us that Rancostat is the best thermostat they have ever used because Rancostats "stay put" when installed and keep customers satisfied.

These field tests prove that the temperature settings do not change and that the overload trips consistently with the heater coil rating. The field tests also show that the Rancostat is not affected by high humidity because there is no moisture accumulation. The Rancostat can be depended upon for extremely accurate operation—over a long period of time.

Write for KR Bulletin and list of Rancostat distributors.

THE AUTOMATIC RECLOSING CIRCUIT BREAKER CO., Columbus, Ohio

RANCOSTAT

The Stainless Steel THERMOSTAT

MASTER SERVICE MANUAL

Chapter 7

Operating Characteristics of Direct-Current Motors; Types of Belts Used

By K. M. Newcum

72. Direct-Current Motors

Direct-current motors used on domestic refrigerators are either 115 volts or 230 volts, the former being the most widely used. D.C. motors are compound wound and their normal speed is 1,750 r.p.m.

The design of the d.c. motor is such that the current is supplied through the brushes during both the starting and running period. Due to this feature, the motor speed may vary up to 300 r.p.m. without any serious damage, when subjected to overload conditions, such as high head or back pressure.

reveal the commutator, brushholder, and brushes.

Arcing between the brushes and the commutator sets up a static, which may cause radio interference. Some d.c. motors are factory equipped with condensers to eliminate this interference. Others do not include this feature which may be added to any d.c. motor.

A condenser (radio interference eliminator) manufactured by Delco conditions, is obtained, and the arcing at the brushes is at a minimum.

The copper commutator bars on the Products Corp. is shown in Fig. 122. One of these condensers should be

Direct-Current Motor



Fig. 121—Century direct-current motor with end bracket removed to show the mica insulated copper bars on commutator, as well as the brushholder and brushes.

As the brushes ride the commutator at all times, more frequent cleaning of the commutator and replacing of the brushes may be expected. Unlike the a.c. motor, an electrical shock may be had by touching the brushes while the motor is running. Care should be exercised in touching these parts with the bare hand.

The brushholder assembly on the d.c. motor is adjustable. The factory adjustment is usually made to obtain the proper speed with the least amount of arcing at the commutator. Should this adjustment be changed, it may be reset by moving the brushholder in either direction until the proper speed, under normal load d.c. motor, like the a.c., are separated and insulated with mica. The same general service conditions apply. Fig. 121 shows a Century d.c. motor with the end bracket removed to

installed for each motor brush. The condenser proper should be bolted to the motor frame, by the through bolts, or end bracket screws, so as to make a good contact. The lead connections should be attached to the screws that hold brush pig tails to the brushholder.

In most all cases of radio interference, this type of condenser will eliminate the difficulty. It may be necessary in unusual cases to ground the motor directly to the nearest convenient cold water pipe, in addition to installing the condensers.

73. Belts

The modern refrigerator where belt driven employs the V-belt drive. The V-belt design is such that it fits down into the sheaves of the pulley, and tends to lock itself in the groove.

Method of Determining Belt Size

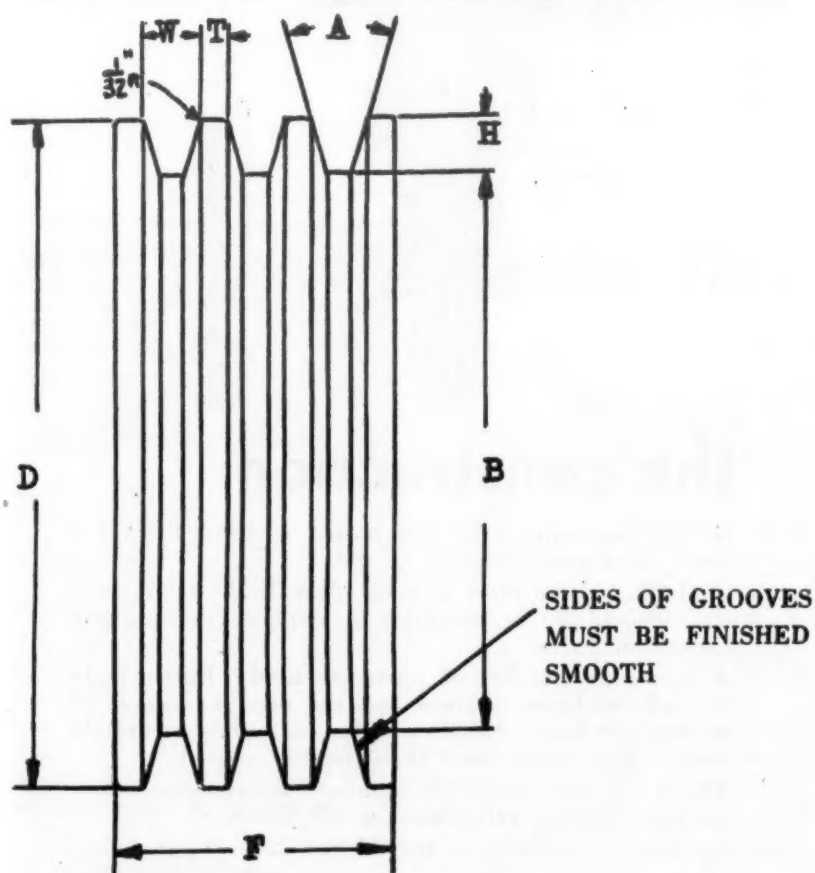


Fig. 123—Diagram for determining V-belt size. L. H. Gilmer Co., belt manufacturer, recommends that this data be supplied with belt orders in cases where refrigerator manufacturer's part number is not available.

Master Service Manual To Be Published About Jan. 1

Published in this issue is Chapter 7, Instalment 3 ("Direct Current Motors" and "Belts") of the Master Service Manual, prepared by K. M. Newcum. The manual is being published serially in Electric Refrigeration News, the first instalment appearing in the April 10, 1935, issue. When all the chapters have been published in the News, the information will be put in book form, with considerable supplementary material.

This manual of information on the design and operation of present-day refrigeration systems will add to the service man's knowledge, and will assist him in meeting specific problems in servicing operations in the field.

Our supply of some of the back issues has been sold out. In order to meet the demand for the complete series we make the following offers to service men:

(1) Send \$3.00 for a year's subscription to Electric Refrigeration News to start Aug. 23, 1935, and we will send reprints of all previous Newcum articles (the first six chapters of the book) in pamphlet form (size 6 1/4 x 8 3/4 inches).

(2) Send your advance order for a copy of the Master Service Manual, enclosing \$3.00 to pay for the complete book, when published, and we will send you free of charge, reprints of all the Newcum articles published in the News up to and including Aug. 21, 1935. These reprints will be in pamphlet form size 6 1/4 x 8 3/4 inches.

Following is an outline of the subjects and the dates of the weekly issues of Electric Refrigeration News in which the material was published:

Chapter 1—THEORY OF REFRIGERATION (April 10).

Chapter 2—PRINCIPLES OF MECHANICAL REFRIGERATION (April 17).

Chapter 3—COMMON REFRIGERANTS (April 24).

Chapter 4—CONDENSING UNITS.

Instalment 1: description of various compressor parts (May 1).

Instalment 2: stuffing box seals, flywheels, and direct-connected units (May 8).

Instalment 3: rotary compressors (May 29).

Instalment 4: care and servicing of shut-off valves and gaskets (June 5).

Instalment 5: condensers (June 12).

Instalment 6: liquid receivers (June 19).

Chapter 5—EVAPORATORS.

Instalment 1: flooded evaporators with low side float valve (June 26).

Instalment 2: high side float valves and flooded evaporators (July 3).

Instalment 3: automatic expansion valves (July 10).

Instalment 4: automatic expansion valves—continued (July 17).

Instalment 5: thermostatic expansion valves (July 24).

Chapter 6—CONTROLS

Instalment 1: low pressure controls (July 31).

Instalment 2: low pressure controls continued (August 7).

Instalment 3: thermostatic controls (August 14).

Instalment 4: thermostatic controls continued (August 21).

Chapter 7—MOTORS

Instalment 1: repulsion start-induction run motors (August 28).

Instalment 2: repulsion start-induction run motors (continued) and capacitor motors (September 4).

Instalment 3: direct current motors and belts.

Chapter 8—INSTALLATION (coming)

Also published in this issue is No. 22 "Service Operations," a series of lessons outlined for the use of the service manager in instructing beginners.

The top section is under tension and the lower section is forced into compression, inducing the sides of the belt to bulge. This bulging action causes the belt to grip the side walls through lateral stress with much the same action as a friction clutch.

This grip remains until the belt is straightened out as it leaves the sheave. The sides of the pulley groove should be smooth, as this aids in releasing the belt and in reducing friction at this point assuring longer belt life. The V-belt is designed to ride sufficiently high in the groove so that there is always an air space between the bottom of the belt and the groove. The belt does not ride upon the bottom of the groove.

Some domestic refrigerator compressors are designed with a flat flywheel, that is, the driven pulley is not grooved. The drive pulley (motor pulley) is always grooved. With the larger belt surface on the flywheel sufficient gripping action is obtained between the bottom of the belt and the flywheel to prevent slippage.

Motor Condenser

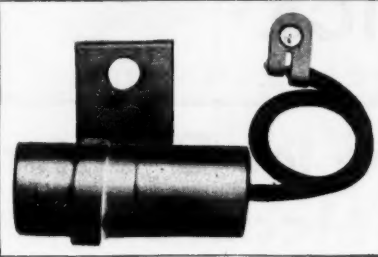


Fig. 122—Delco condenser for eliminating radio interference static produced by arcing between brushes and commutator.

Modern V-belts have sufficient flexibility for use on small diameter motor pulleys, yet are so constructed that stretching is reduced to a minimum. Refrigerator belts should only be fairly taut, not tight.

Under ordinary running conditions, the belt should be only sufficiently taut to remove the slack and undue sag. The belt should not be run loose to a point where it slips on starting. This slipping creates heat between the belt and pulley and, if excessive, may cause the belt to burn.

The sheaves should always be in exact alignment. If they are out of line, the belt will show excessive wear. Inaccurately cut grooves or dirty grooves may cause the belt to whip. Often this whipping sets up an objectionable noise. All foreign material should be cleaned from the grooves, until they show a clean, polished surface.

The belt should not be forced onto the sheaves with a crowbar, screw driver, or other tool. Forcing the belt at a localized point may break some part of the belt structure and weaken it at that point. The belt should be kept free of oil and grease,

and belt dressings are not recommended.

The grooves in the pulleys may differ as to height, width, and angle. Where both the motor pulley and the flywheel are grooved, the grooves on the original equipment should correspond. There is a correct size replacement belt, as regards length, width, height, and angle for every refrigerator manufactured in the past several years. Two different makes may use the same length of belt, yet their pulley grooves may differ considerably, and the belts would not be interchangeable.

Belt manufacturers can furnish the correct belt for each machine if given the model number or the manufacturers part number. If this information is not available the data shown in Fig. 123 may be determined and supplied to the manufacturer along with the minimum and maximum center distance between the drive pulley (motor pulley) and the driven pulley (flywheel). Fig. 123 shows a double grooved pulley. When supplying the data on a single grooved pulley only dimensions D, B, H, A, and W are necessary.

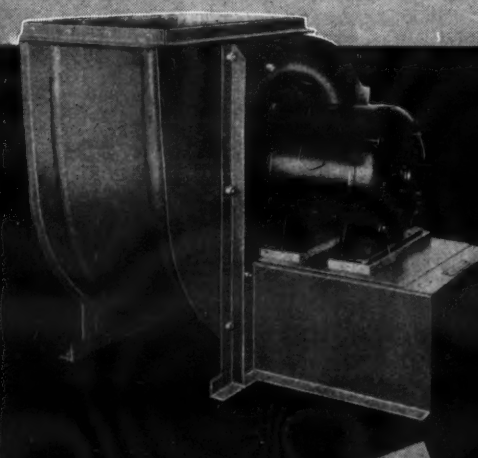
M.I.T. Resumes Courses For Service Men

BOSTON—A series of eight weekly lectures on the installation and servicing of household electric refrigerators, open to all service men, has been begun at Massachusetts Institute of Technology.

John G. Praetz, Jr., service manager of Liquid Carbonic Corp., formerly instructor in mechanical engineering at M.I.T., is the instructor at these classes, which are being held Friday evenings.

This course is a project of the University Extension Service Division of the state department of education. Lectures will be illustrated by charts and slides.

WAGNER *Multi-Speed* MOTORS



Where Speed Changes Mean **ECONOMICAL OPERATION**

2-SPEED
3-SPEED
4-SPEED
CONSTANT TORQUE
VARIABLE TORQUE
CONSTANT HORSEPOWER

Wagner multi-speed motors are especially suitable for air conditioning equipment, refrigeration systems, blowers, fans, conveyors, compressors, or for any machine where it is desirable to operate at more than one constant speed.

No matter what your motor requirement may be, there's a Wagner multi-speed motor designed and built for the job. They are available in 2-speed, 3-speed, 4-speed, constant-torque, constant-horsepower, and variable-torque; horizontal or vertical; 2 or 3 phase; 25 to 60 cycles; 1/2 to 125 hp.

The insert above illustrates a Wagner 1 1/2 hp., 3-speed, constant-torque, type MRP-1 multi-speed motor driving a 3000 c.f.m. exhaust blower. During cold weather one must be careful about operating exhaust fan equipment if the proper amount of heat for comfort is to be retained in a building. Therefore, in cold weather the blower is operated at reduced speeds by turning a switch of the multi-speed motor and adequate ventilation is acquired without dissipation of too great amount of necessary heat.

Ask for a copy of Bulletin 174 which describes Wagner multi-speed motors as well as other types of polyphase motors.

M335-2B

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.
Transformers Motors Fans Brakes

SERVICE

How to Service the Ice-O-Lator Absorption Machine

General Description

The Ice-O-Lator unit was manufactured by the National Refrigerating Co., a subsidiary of Winchester Repeating Arms Co. The firm's last known address was 125 Munson St., New Haven, Conn.

Organized in March, 1927, to manufacture both gas and electric household and commercial units under the trade name "Ice-O-Lator," the business was discontinued in December, 1928. In 1929, the patents and trade mark were sold to Frigidaire Corp. of Dayton, Ohio.

The Ice-O-Lator is an absorption machine using a gas burner, ammonia and cooling water (Fig. 1). Its operation depends on the principle

This installment of the article on the Ice-O-Lator absorption unit presents a description of some of the various parts of the system. Other parts will be described in next week's article.

of the ammonia dissolving in a solvent at low pressure from which it is driven off by the application of heat and then condensed.

The absorption machine has two distinct cycles. During the first, or "heating" period of approximately 45 minutes, no refrigeration takes place. In the second, "absorption" or "cooling" period of from 3 to 12 hours, depending on the cooling load, refrigeration is continuous. In addition, there is a small "coast" period of about 10 minutes, during which the controls shift from the heating to the cooling period and adjust themselves.

As the ammonia solvent is heated, ammonia vapor is driven off and passes through a check valve to a condenser where it gives up its heat to the cooling water and liquefies. From the condenser, the ammonia flows to a liquid float valve which admits only liquid refrigerant to the evaporator.

In the evaporator is a float valve and an electrical contact. As the liquid level rises, the float valve closes and actuates the contactor which in turn shuts off the gas burner and turns cooling water into the generator, quickly cooling it and dropping its internal pressure.

When the generator has cooled to the point where its pressure is below 38.6 lbs. per sq. in., the ammonia in the evaporator begins to boil, the ammonia gas having a free passage back to the boiler where it is again

absorbed by the solvent. This continues until all the ammonia evaporates, then another set of contacts come into play, turning on the gas and the cycle is repeated.

Generator

The generator consists of an outer steel tube or shell into which is welded a re-entrant tube so that the space between the two tubes is entirely sealed. In this sealed space is a series of copper conductor vanes which are pressed on the outside of the inside or re-entrant tube.

A continuous copper tube for cooling water is wound between and around these vanes in intimate contact with them. The ammonia inlet and outlet tube welded to the head of the generator is interconnected with a number of distributor tubes running the length of the inside of the generator. These distributor tubes

Metal Check Valve

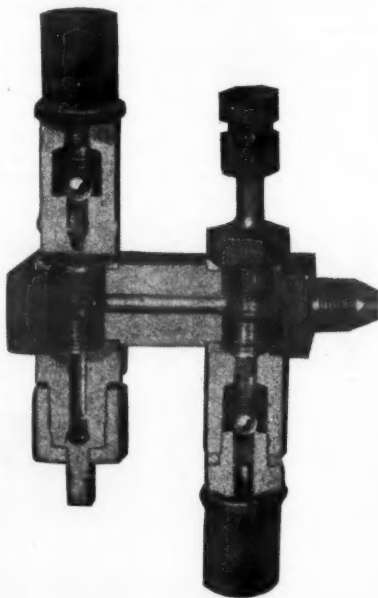


Fig. 2—Ball-type check valve assembly, sectional view.

are slit their entire length and are covered with a woven asbestos tubing.

These tubes assure even distribution and free passage of the ammonia gas entering or leaving the generator. All outer surfaces of the generator exposed to the products of combustion from the gas flame are protected against corrosion. The absorbing material completely fills the space in and around the copper vanes between

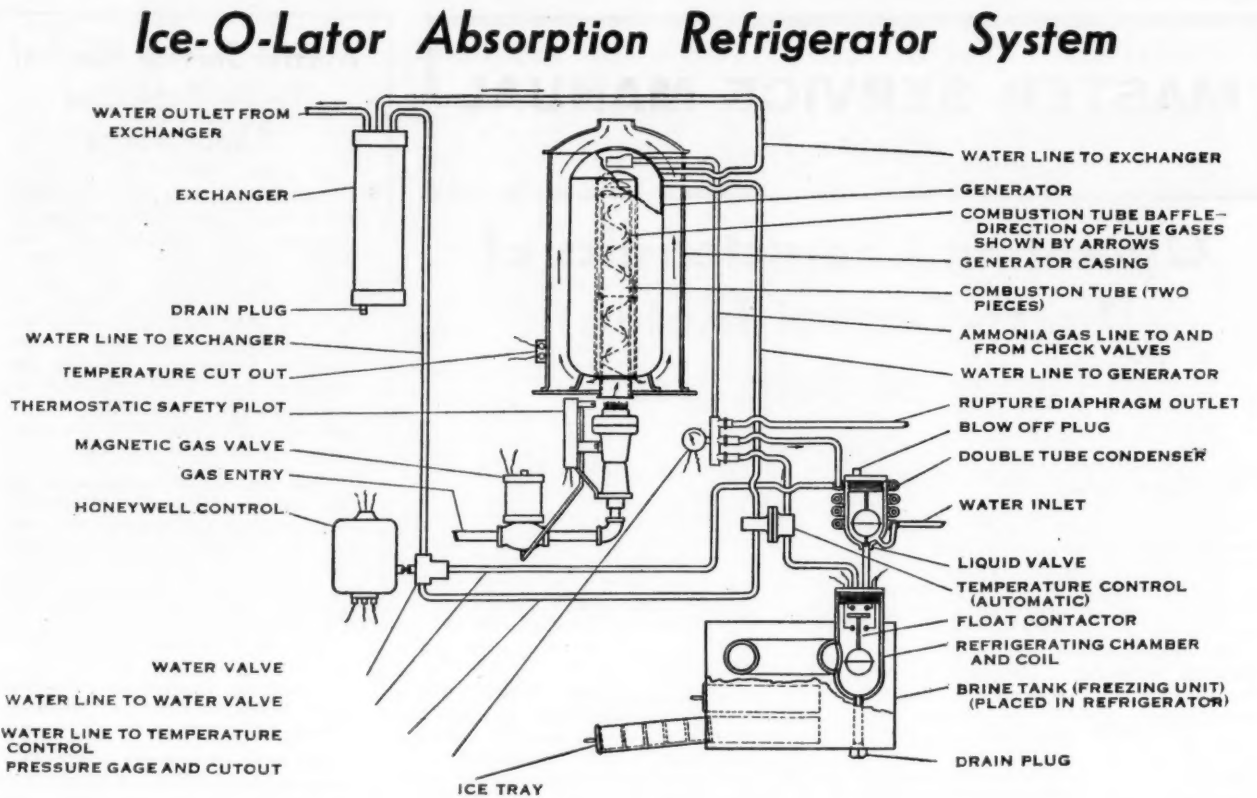


Fig. 1—Diagrammatic view of Ice-O-Lator absorption system showing paths of cooling water and ammonia.

the inner and outer steel shells.

Metal Ball Check Valves

These check valves are of simple design of the ball type (Fig. 2). The metal ball valves seat by gravity and are set to operate in opposite directions. The steel valve retainers are connected to a steel filter block upon which is mounted the pressure gauge and rupture diaphragm.

Aluminum washers provide ammonia tight joints where these valve retainers are screwed into the filter block. The inlet and outlet passages of the retainers are fitted with fine wire gauze filters to protect the valve seats from being obstructed by any particles.

The illustration (Fig. 2), shows a sectional view of the ball-type check valve assembly. The fitting on the lower left end of the steel filter block is the rupture diaphragm device. The fitting on the upper right end of the steel filter block provides a coupling to which the pressure gauge is attached. The screw threads on the end of the block form a part of the compression union to which the generator inlet and outlet tube are connected.

The check valve at the upper left end of the block is termed the "condenser check valve" as it permits the flow of ammonia gas to the condenser and liquid valve chamber. The check valve at the lower right end is termed the "absorption check valve"

rupture diaphragm are attached. Aluminum washers provide ammonia tight joints where these valve retainers are screwed into the filter block.

The top connection on the filter block assembly illustrated in Fig. 3 is a part of the compression union to which the generator inlet and outlet tube is connected. The top side outlet shows the rupture diaphragm attached. The middle side outlet shows the "condenser check valve" or valve which permits the flow of ammonia gas to the condenser and liquid valve chamber. The lower side outlet shows the "absorption check valve" or the valve which permits the return flow of ammonia gas from the refrigerating coil to the generator.

Rubber Check Valve and Filter Block Assembly

The ammonia gas entering or leaving the generator must pass through the filter in the filter block. The filter consists of a perforated metal cylinder around which is wrapped a layer of filter paper which in turn is wrapped with a fine mesh metal screen.

Condenser

The condenser is made of copper and consists of a small tube within a larger tube. Both tubes are continuous and the ammonia passes downward through the inside of the smaller tube. The larger tube forms a water jacket around this and the water flows upward through the coil jacket.

The purpose of having the water flow counter to the direction of the ammonia is to have the liquid ammonia as cool as possible when it leaves the condenser. As there is about a 10° rise in the temperature

of the condenser water, the coldest point will be at the water inlet to the condenser.

Liquid Valve

The liquid valve consists of a chamber containing a float-controlled needle valve and a spring-loaded relief valve. Normally, only liquid refrigerant can pass through the liquid valve chamber as liquid is required to lift the float-controlled needle valve from its seat.

However, if the needle valve orifice should become plugged, the pressure would soon rise to a point where the relief valve would operate and permit the machine to continue its work, although not so efficiently. There is a blow-off screw plug in the head of the liquid valve chamber.

This is utilized to release any air that might have been allowed to leak into the system during the process of installation. The liquid ammonia from the condenser enters the liquid valve chamber on the side near the base. The liquid line or tube to the refrigerating chamber is connected directly to the bottom of the liquid valve chamber.

The liquid valve chamber is surrounded by the copper condenser.

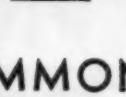
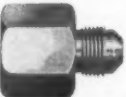
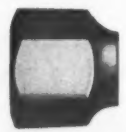
Refrigerating Chamber and Coil

The refrigerating coil is constructed of seamless drawn steel and the chamber is interconnected with this coil. All joints are welded except the refrigerating chamber head which is threaded. The refrigerating chamber and coil are supported within the brine tank by the steel extension tube at the base of the chamber.

The lower end of the tube is threaded below the shoulder. The threaded portion protrudes through the bottom of the brine tank and the

(Concluded on Page 17, Column 1)

UNDERSTANDING



When all phases of purpose, design, and manufacture are in harmony with the needs of the buyer, his task becomes only that of selection of the source of supply.

In the fitting business, for instance, buyers have, ever since the refrigeration industry was born, learned to rely on Commonwealth Brass Corporation for keen appreciation and understanding of their problems which always results in the production of fittings "Built Right To Stay Tight."

Commonwealth people know the fitting business from every angle. Their facilities, experience and understanding of the needs of the industry insure satisfaction to so marked a degree that when fittings are mentioned the first thought is "Commonwealth."

Not only on standard numbers, but on semi-standards and specials is this understanding evident. Any fitting need may be filled, promptly, efficiently and inexpensively, by specifying Commonwealth as the prime source of Refrigeration Fittings

BUILT RIGHT TO STAY TIGHT

COMMONWEALTH BRASS CORP.

Commonwealth at G. T. R. R.
Detroit, Mich.

Rubber Check Valve

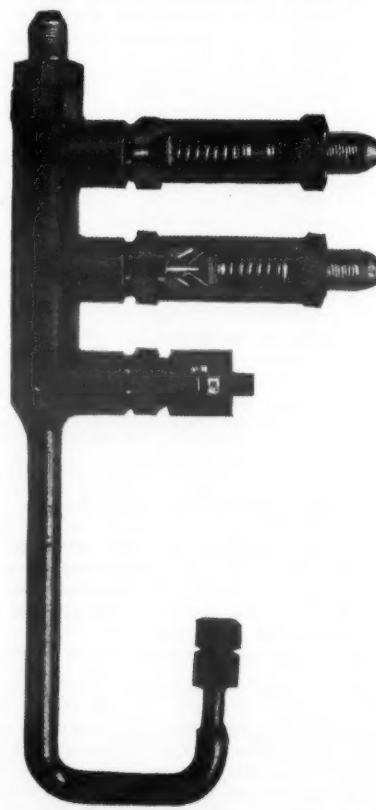


Fig. 3—Cross-section of rubber check valve showing condenser and absorption checks.

as it permits the return flow of ammonia gas from the refrigerating coil to the generator.

Rubber Check Valves & Filter Block

These valves consist of a conical rubber valve of the spring-loaded type. The V-shaped spring attached to the valve stem guide and bearing against the side of the valve stem prevents singing on noisy operation due to any vibrating tendency. The valves are set to operate in reverse directions. The steel valve retainers are connected to a steel filter block to which the pressure gauge and

the construction

of any expansion valve determines whether the valve gives satisfactory service or not.

Study the above cross section. It will show you why the Model 220 is becoming a popular thermostatic expansion valve.

A minimum number of parts are used. Entire body is made of brass forgings and the needle is made of stellite. It has a double diaphragm and is accurately made. The entire unit is chromium plated.

That's why the Model 220 is super-sensitive and assures an even flow of refrigerant at all times.

Its time to investigate the Model 220. Write today.

AUTOMATIC PRODUCTS COMPANY

121 N. Broadway

Milwaukee, Wisconsin

SERVICE OPERATIONS

A SERIES OF LESSONS OUTLINED FOR THE USE OF THE SERVICE MANAGER
IN INSTRUCTING BEGINNERS IN SERVICE WORK

No. 22—Dumping Oil Out of Oil-Logged Flooded-Type Cooling Coil

By K. M. Newcum

REASON:

If the flooded type coil is not level, or the float valve assembly is not properly calibrated, the oil from the compressor may collect in the coil, and oil bind or oil log the refrigerant so that vaporization is restricted to a point that little or no refrigeration is taking place. When this condition is discovered proceed as follows:

PROCEDURE:

A. Pump all the refrigerant out of the cooling coil. Refer to Lesson No. 19, steps A, B, C, D, E, F, G, H, I, J, (omit K and L.).

B. Remove coil from hangers, and take the coil out of the cabinet. (It is best to take the coil out of doors, or down in the basement).

C. Remove the float valve assembly. Lesson No. 19 Q.

D. Pour the oil out of the cooling coil into a receptacle, so that it can be weighed or measured.

E. Replace the float valve, using new gaskets, and replace the header valves, using new gaskets. Operation 19 R. (See note).

F. Wipe all traces of oil from the cooling coil and valve header, replace the coil in the cabinet, and connect the liquid and suction lines in their respective positions on shut-off valves.

G. Proceed as in Operation No. 12, steps V to Z inclusive.

H. Check with instructor.

Note: Most cases of oil logging are traced to the float valve being calibrated too low, that is, floating too low in the liquid refrigerant, and retaining an excessive oil level on top of the refrigerant, thus it is recommended that a new float valve properly calibrated, be used to replace the old valve to prevent a recurrence of the same condition. Always add to the compressor an equal amount of new oil to that that was dumped from the coil in the above operation. See directions for adding oil in Lesson No. 15.

Description of Parts Of Ice-O-Lator

(Concluded from Page 16, Column 5)

shoulder forms the support. There is a gasket between the shoulder and the bottom of the tank. This joint is made tight by a large nickel-plated nut on the under side of the tank.

In the lower end of this refrigerating chamber support tube is a "loading plug." If the machine should be undercharged with ammonia, this "loading plug" may be removed and a connection made to an ammonia "loading cylinder."

The refrigerating chamber contains two pairs of electrical contacts and a float-controlled contactor. The contactor consists of a flat spiral spring which will assure a positive circuit between the bottom pair of contacts when the refrigerating chamber is empty and between the top pair of contacts when the proper amount of liquid ammonia has been delivered to this chamber. The silver contactor is insulated from its tubular support (attached to the float) by a porcelain bushing.

This tubular support extends through the float and forms a guide over the vertical steel rod extending from the base of the refrigerating chamber to the center of the head. This guide rod prevents the float from sticking to the side of the chamber and also maintains the silver contactor in a horizontal position.

FACTORY ENGINEERS SUPERVISE THIS TRAINING

THERE is no finer insurance for success in Refrigeration and Air Conditioning installation and service work than the right kind of training.

R-A-C-I Training is the right kind. To make doubly sure that men are trained exactly as the industry wants them trained, leading manufacturers have appointed some of their own engineers as a Board of Governors to direct and supervise the training. These men meet in regular conferences and have full power and authority to make the training fit the needs of their industry, at all times.

Men who are ambitious to advance in this big, new field, and their employers as well, are invited to write for details.

REFRIGERATION AND AIR CONDITIONING
INSTITUTE
2150 LAWRENCE AVE. — CHICAGO



The Officially Endorsed School

Brine Tank and Ice Trays

The brine tank and ice trays are constructed of heavy gauge tin plated sheet copper. The brine tank surrounds the refrigerating chamber and coil and is filled with a brine solution consisting of 40 per cent glycerine and 60 per cent water by volume.

Water Valve Assembly

The water valve consists of a rotary disc bearing against a flat seat. The disc is made of self-lubricating graphite bearing bronze; it is held against its seat by a bronze spring and also by the inlet water pressure in the valve chamber. As the valve rotates on its seat, the change in direction of water flow is accomplished by covering and uncovering ports.

The valve is keyed to a brass shaft which in turn is keyed to the end of the Honeywell control, thus forming a semi-flexible coupling. At the point where this coupling shaft enters the water valve, there is a stuffing box. The packing in this is always held tightly compressed by the spring-loaded gland around the shaft, thus taking care of any wear.

The water from the condenser outlet enters the water valve chamber and is then directed by the valve out through the right-hand port (during the heating period) to the exchanger and drain, or (during the cooling period) through the left-hand port to the temperature regulator and through the generator cooling coil to the exchanger and drain.

Operation of Water Valve

At the end of the absorption cycle, a bottom contact in the refrigerating chamber starts the Honeywell control which will operate for a period of 10 minutes. Two minutes after starting, the gas valve switch turns ON. At the same time, the water flow through the generator is shut off by a port in the rotary water valve disc which passes from the short circular groove in the water valve disc which passes from the short circular groove in the water valve seat to the long circular groove, thus directing the condenser water from the water valve to the exchanger and drain (Fig. 4).

During the remaining eight minutes the valve port will continue to feed the long circular groove and the Honeywell control will automatically stop, leaving the gas burner "on" and the water flowing through the condenser only.

Service Data on Other 'Orphan' Machines

This article is one of a series published by Electric Refrigeration News to give the service man help in servicing various makes of machines. Most of the makes described to date have been "orphan" machines on which service information is no longer readily available.

Service instructions on the following makes were published in these issues:

Absopure household.....	March 25, 1931
Majestic hermetic.....	Aug. 16, 1933
Allison.....	May 30 & June 6, 1934
Welsbach.....	June 13, 20 & 27, 1934
Rice household.....	July 4, 1934
Wayne household.....	July 11, 1934
Absopure com'l.....	July 18, 25 & Aug. 1, '34
Iceberg.....	Aug. 8, 1934
U. S. Hermetic.....	Aug. 15, 1934
Belding-Hall ElectricICE.....	Aug. 22 & 29, 1934
Majestic standard.....	Sept. 12, 19 & 26, '34
Holmes household.....	Oct. 10, 17 & 24, 1934
Iroquois.....	Feb. 20 & 27, 1935
Socold.....	May 15 & 22, 1935

At the end of the heating cycle a top contact in the refrigerating chamber will start the Honeywell control which will again operate for a period of 10 minutes. At the end of the first two minutes the gas valve switch is turned "off," but the port in the water valve disc will continue to feed the long circular groove for another six minutes (this is called the "coast period"), thus allowing the heating cycle to be completed by the residual heat in the generator, before the port in the water valve disc will pass from the long groove to the short groove.

The flow of water is now directed through the valve to the temperature regulator, through the generator to the exchanger and drain. During the remaining two minutes of the 10-minute period the port in the water valve disc will continue to feed the short circular groove and the Honeywell control will automatically shut off leaving the gas burner "off" and water flowing through the generator.

At the end of the absorption cycle the Honeywell control and water valve will repeat the above described operations.

(To Be Continued Next Week)

Thornton Heads District

MONTREAL, Que.—Glen Thornton has been appointed supervisor of the Montreal district for Frigidaire Corp., the move being made to allow the provincial supervisor more time for coverage of dealers throughout the Province of Quebec.

Water Valve Operating Cycle

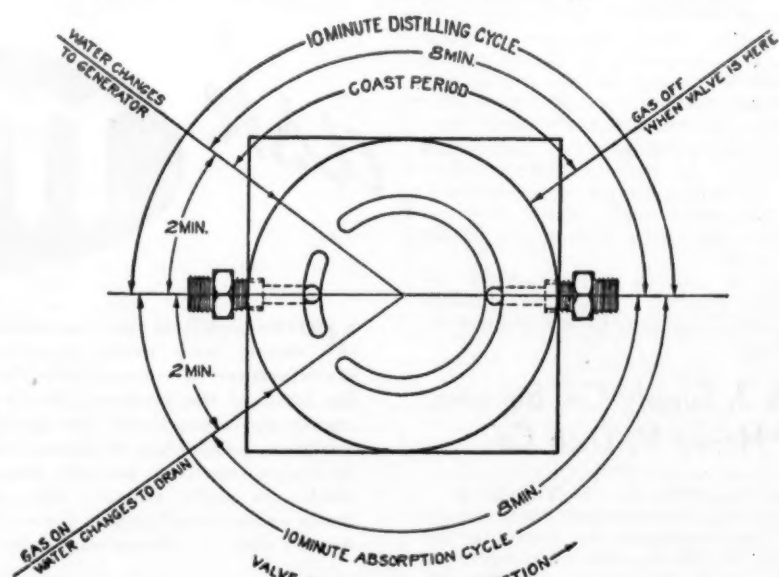
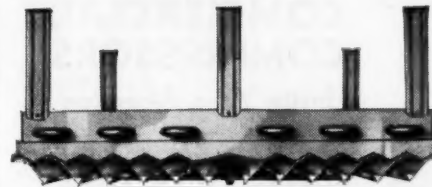


Fig. 4—Ice-O-Lator water valve diagram showing circuit of water through the absorption cycle.

BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE
TO THE REFRIGERATION INDUSTRY

PEERLESS FLASH COOLER

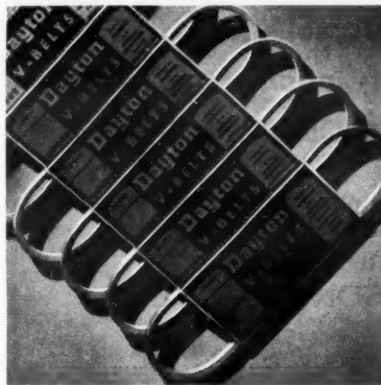


The NEW Eye Appealing
Method of Cooling Walk-
In Refrigerators

STYLE & RESULTS

Fin Coils and Drip Pans Engineered in an Integral
Unit—Saves Installation Cost and Operating Cost

PEERLESS ICE MACHINE CO. 515 W. 35th St. Chicago



THEY'RE DAYTON V-BELTS

● Silent, gripping transmission, year in and year out. No slipping... no twisting... no whipping. That's Dayton V-Belt performance. A nearby distributor can quickly supply you with Dayton V-Belts, especially built for all makes of electric refrigerators, washers and other appliances. Write today for price list and full information.

THE DAYTON RUBBER MANUFACTURING CO.
DAYTON, OHIO
The World's Largest Manufacturer of V-Belts

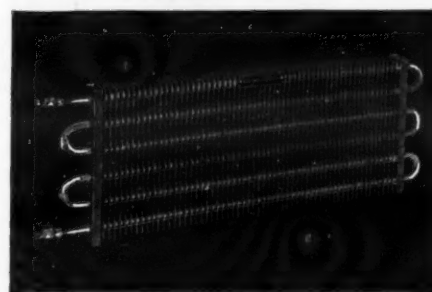
TYPE KR—
12 MODELS

RANCOSTAT

—the
Stainless
Steel
Thermostat

Ranco controls are absolutely dependable. You can install them—and forget about them. But we don't. We have made thousands of check-ups of Rancostats in service. We know that Rancostats stay on the job — operate accurately — keep customers satisfied. Write for KR Bulletin.

The Automatic Reclosing Circuit Breaker Co.
Columbus, Ohio



Rempe "FIN COILS"

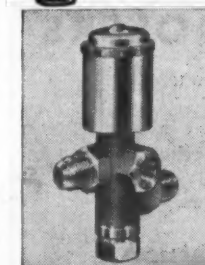
3/4" O. D. copper tubing
with aluminum fins

340 N. Sacramento Blvd.

Chicago, Illinois Kedzie 0483
PIPE COILS AND BENDS Send for catalog, price list and sample

Methyl Chloride, Freon, Sulphur Dioxide and Ammonia

STANDARD REFRIGERATING APPLIANCES



TWO TEMPERATURE VALVES with BUILT-IN CHECK

Write for bulletin on complete line covering refrigerating appliances, liquid line filters, dehydrators, acid neutralizers, standard parts and materials, service tools, shaft seals, bearing metals and parts. Descriptive literature will be gladly furnished on any or all of these lines on request.

AMERICAN INJECTOR COMPANY 1481-14th Street,
Detroit, Mich.



CASH IN

on the popularity of
GILMER ELECTRIC
REFRIGERATOR BELTS

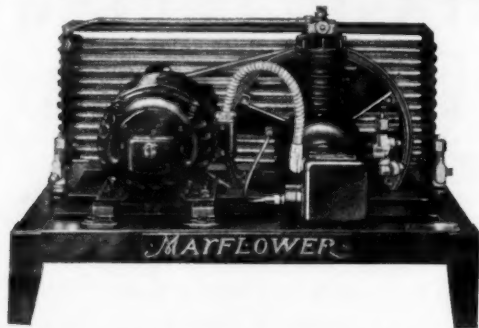
Sturdy, slipless, built-to-fit and quiet-running, Gilmer Refrigerator Belts enjoy a wide consumer acceptance. Cash in on their popularity. Nominal investment required. Each belt sleeved and marked for easy identification. Write NOW for folder, JS-94, that tells the story of complete line of belts for all makes and models.

Gilmer
Makers of the
World's Best-Known V-Belts

THE L. H. GILMER COMPANY, Tacony, Phila., Pa.
SPECIALISTS IN QUALITY BELTS SINCE 1903

BUYER'S GUIDE

MANUFACTURERS SPECIALIZING IN SERVICE
TO THE REFRIGERATION INDUSTRY



MAYFLOWER COMMERCIAL COMPRESSORS

Invite Your Attention

Aircooled and Watercooled SO₂
and Methyl Chloride Models
1/3 H. P. to 2 H. P.

Manufactured by

HARDY MANUFACTURING CO., Inc., 100 Davis Ave., Dayton, Ohio



CONDENSING UNITS AND COMPRESSORS FOR HOUSEHOLD REFRIGERATION BY

JOMOCO, INC.

A SUBSIDIARY OF THE
JOHNSON MOTOR CO.
Waukegan, Ill.
CABLE ADDRESS, JOMOCO-WAUKEGAN

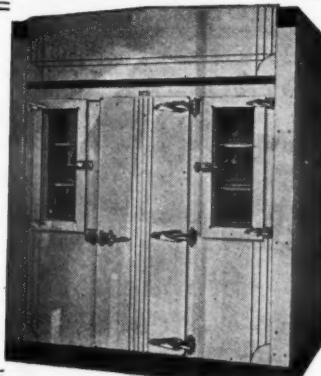
KOCH COMMERCIAL REFRIGERATOR CABINETS

All types and sizes of heavily insulated
refrigerators and display cases.

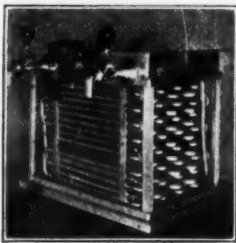
WANTED Distributors and Sales Agents

Attractive sales proposition. Some good
territories available. Many exclusive fea-
tures. Write for information, and submit
your qualifications.

KOCH REFRIGERATORS
North Kansas City, Mo.



ATTENTION REFRIGERATION DEALERS!



In your next beer installation, try this cooler and
you too will be convinced.

1. Insures not only customers, but also your satisfaction.
2. Perfect beer dispensing, without any service calls.
3. Not only cold, but carbonized "live beer".
4. No motors, no moving parts, easy to multiplex without any extra controls.
5. In case of mechanical trouble, no interruption of customers business, can be used with ice.

IT HAS EVERYTHING & THE PRICE IS RIGHT

ONE DRAW BEER COIL COMPANY

Manufacturers of all kinds of Liquid Coolers
435 Collinsville Ave., East St. Louis, Ill.



PURO ELECTRIC WATER COOLERS

Thoroughly reinforced all steel attractively
finished cabinets.

Different models of varying capacities.

Write for details and sales prices.

Puro Filter Corporation of America

440 Lafayette Street, New York City Spring 7-1800

BOUND VOLUMES of ELECTRIC REFRIGERATION NEWS

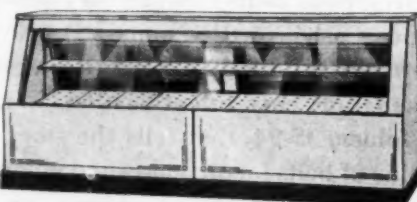
A limited number of recent volumes are available. Each of the following
volumes contains all weekly issues of Electric Refrigeration News issued during
a period of four months. Stiff paper board covers.

Vol. 8—Jan. 4 to April 26, 1933. (Serial Nos. 198 to 214.)
Vol. 9—May 3 to Aug. 30, 1933. (Serial Nos. 215 to 232.)
Vol. 10—Sept. 6 to Dec. 27, 1933. (Serial Nos. 233 to 249.)
Vol. 11—Jan. 3 to April 25, 1934. (Serial Nos. 250 to 266.)
Vol. 12—May 2 to Aug. 29, 1934. (Serial Nos. 267 to 284.)
Vol. 13—Sept. 5 to Dec. 28, 1934. (Serial Nos. 285 to 301.)
Vol. 14—Jan. 2 to April 24, 1935. (Serial Nos. 302 to 318.)

Price \$3.00 per volume, f.o.b. Detroit. Shipment will be made by express
collect unless otherwise specified. Please send remittance with order.

Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

"DRY-KOLD", A COMPLETE LINE!



Refrigerator Display Cases
Meat Coolers Fish Cases
Complete Market Equipment

Refrigerators for Hotels,
Restaurants, Florists,
Delicatessens

Furnished with coils or without
Territory open for good dealers

The "DRY-KOLD" REFRIGERATOR CO., Niles, Michigan

PATENTS

Issued Aug. 27, 1935

2,012,262. REFRIGERATION APPARATUS. Gregg F. Forsthoefel, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Nov. 22, 1933. Serial No. 699,219. 3 Claims. (Cl. 62-89.)

2,012,269. FIN TUBE STRUCTURE. Edward S. Cornell, Jr., Larchmont, N. Y., assignor to American Radiator & Standard Sanitary Corp., New York, N. Y., a corporation of Delaware. Application Nov. 29, 1932. Serial No. 644,786. 21 Claims. (Cl. 257-263.)

2,012,308. REFRIGERATING APPARATUS. Edward Heitman, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application July 11, 1932. Serial No. 621,895. 10 Claims. (Cl. 62-95.)

2,012,323. THERMOSTAT. Joseph Frederick Smart, New Britain, Conn., assignor to Landers, Frary & Clark, New Britain, Conn., a corporation of Connecticut. Application Feb. 10, 1932. Serial No. 591,981. 8 Claims. (Cl. 200-138.)

2,012,494. ELECTRIC REFRIGERATOR ASSEMBLY. Howard E. Blood, Detroit, Mich., assignor, by mesne assignments, to Borg-Warner Corp., a corporation of Illinois. Application March 29, 1930. Serial No. 439,931. 3 Claims. (Cl. 62-116.)

2,012,582. METHOD OF MAKING DRY SYSTEM EVAPORATORS. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y. Application July 30, 1932. Serial No. 626,872. 3 Claims. (Cl. 113-118.)

2,012,666. REFRIGERANT EVAPORATOR DEVICE. Delos P. Heath, Detroit, Mich. Application April 23, 1932. Serial No. 607,117. Renewed July 13, 1934. 7 Claims. (Cl. 62-126.)

2,012,704. REFRIGERANT COMPRESSING APPARATUS. William B. Anderson, Springfield, Mass., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., a corporation of Pennsylvania. Application Oct. 5, 1932. Serial No. 636,393. 9 Claims. (Cl. 230-58.)

2,012,891. EVAPORATOR. George B. Palmer, Jr., Detroit, Ray B. Grubba, Center Line, and Philip Missner, Detroit, Mich., assignors to McCord Radiator & Mfg. Co., Detroit, Mich., a corporation of Maine. Application April 13, 1933. Serial No. 665,848. 10 Claims. (Cl. 62-95.)

2,012,892. REFRIGERATING METHOD AND APPARATUS. Edward Rice, Jr., New York, N. Y. Application April 12, 1934. Serial No. 720,289. 16 Claims. (Cl. 62-91.5.)

2,012,910. CONDENSER FOR REFRIGERATING SYSTEMS. Fred E. Hubbs, Philadelphia, Pa. Application March 27, 1935. Serial No. 13,319. 8 Claims. (Cl. 257-37.)

DESIGN

96,700. DESIGN FOR A REFRIGERATOR CABINET. Judson S. Sayre, Chicago, Ill., assignor to Montgomery Ward & Co., Inc., Chicago, Ill., a corporation of Illinois. Application May 5, 1934. Serial No. 51,701. Term of patent 3 1/2 years.

Askin Gives Methods of Testing Valve Element

BUFFALO—Service organizations can easily check valves at their shops to determine whether or not the power element is functioning, says Joe Askin, chief engineer of Fedders Mfg. Co.

Mr. Askin outlines the method as follows:

Place a small charging drum of methyl chloride or Freon in a vise and attach the expansion valve inlet to it. Upon opening the valve on the drum the refrigerant will squirt through the expansion valve outlet.

Place the expansion valve under this refrigerant. If the power element is functioning the flow of refrigerant will stop immediately.

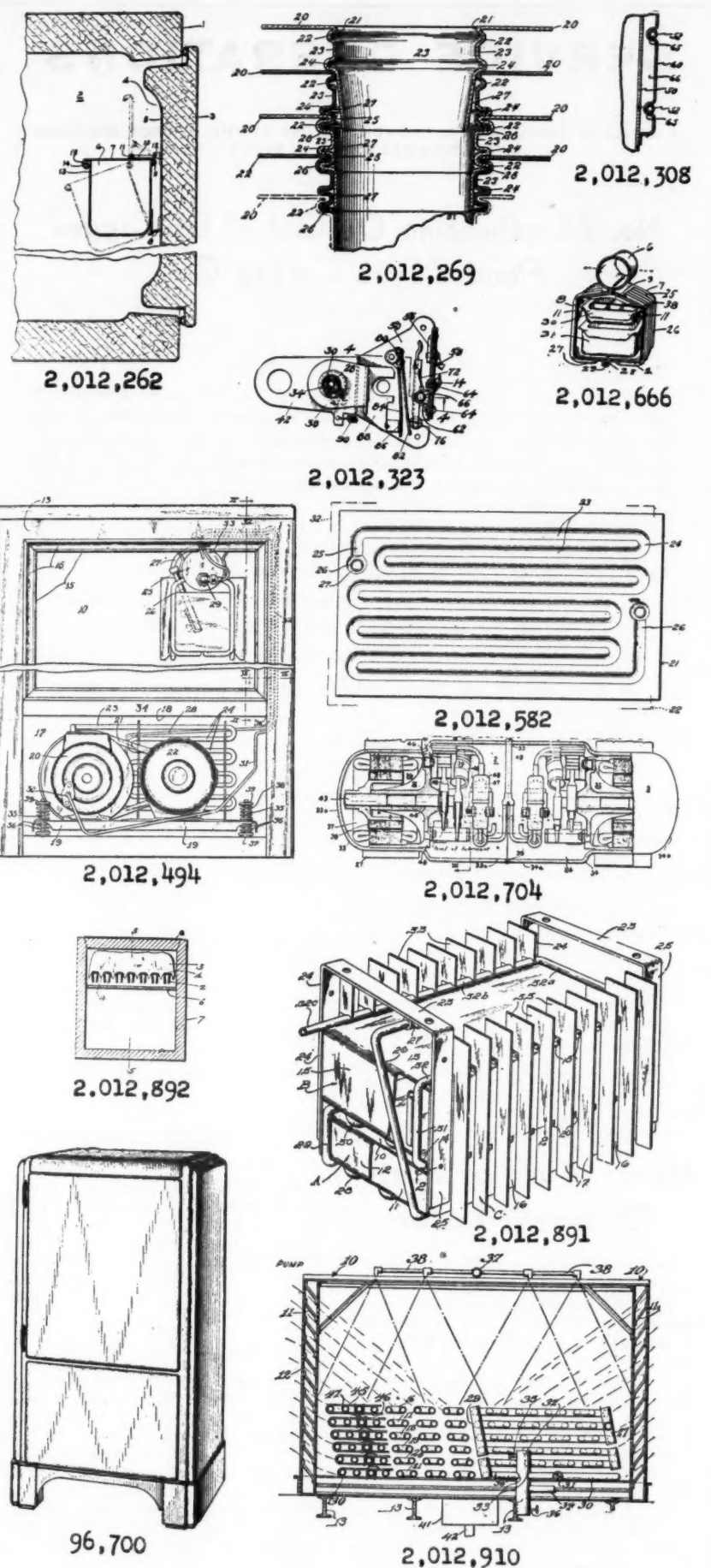
Hold the bulb in the palm of your hand, thus warming it. If the power element is functioning, the refrigerant will begin to flow from the valve outlet. To stop the flow repeat as above.

By manipulating the adjusting thumb nut the valve may be checked over the whole range or adjustment. This test, incidentally, also determines whether the valve strainer or needle is plugged.

Lack of flow of refrigerant, or restricted flow of refrigerant through the orifice can also be determined by this test.

D. & J. Supply Co. Becomes Henry V. Dick Co.

CHARLOTTE, N. C.—The D. & J. Supply Co., refrigeration parts wholesaler, has changed its name to the Henry V. Dick Co. Management, policy, and ownership remain unchanged. Henry V. Dick and Charles I. Dick, equal partners, retain sole ownership and management of the business.



Melchior Armstrong Holds Annual Picnic

NEW YORK CITY—Approximately 60 employees of the Melchior, Armstrong, Dessau Co. here were entertained by the company recently at an afternoon and evening outing to the north shore of Long Island, which included lunch, baseball game, dinner, and dancing.

The baseball game, feature of the afternoon's entertainment program, was won by the domestic refrigeration department, after a hard battle with the export department team.

Smedley, New Haven, Will Stock Va. Smelting Line

NEW HAVEN, Conn.—The Smedley Co. here is a new stock point for sulphur dioxide and methyl chloride manufactured by the Virginia Smelting Co., West Norfolk, Va.

Gilmer Branch Moves

DALLAS—The Dallas branch of the Gilmer Co., manufacturer of belts for compressors, has just moved to new quarters at 304 S. Pearl St. Formerly, it was located at 2706 Commerce St.

IF IT'S RUBBER-

ask **Miller**

MILLER'S technical staff has worked closely with every important manufacturer of refrigerators, since the birth of the business. Developing special compounds for specific qualities, suggesting improvements in design, spotting possible economies, are daily routine with us. Strict professional respect for confidential data is always maintained.

If you are looking for a rubber compound that is free from odor, oil-resisting, grease-resisting, and even age-resisting—or if you have a peculiar problem in design of a rubber part—let Miller do your worrying for you. If we have not already a formula or a blueprint that answers the purpose, we will find one for you. No obligation. Just write to—

REFRIGERATOR PARTS DEPT.

Miller Rubber Products Co., Inc.—Akron, Ohio

KRAMER

COMMERCIAL EVAPORATORS

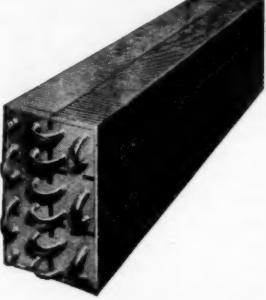
3" - 2 1/2" - 2" - 1 3/4" - 1 1/2" & 1 1/4"

TUBE CENTER
Built to any overall sizes and capacities

UNIT COOLERS — COOLING COILS — CONDENSERS

TRENTON AUTO RADIATOR WORKS

210-212 West 65th St. TRENTON 5114 Liberty Ave.
New York City New Jersey Pittsburgh, Pa.



Just Out New BIG CATALOG

Refrigerator service men and dealers send for our catalogue No. 110 showing lowest net prices on thousands of parts and accessories for all makes. Write us on your letter head today.

The HARRY ALTER CO.
1730 S. MICHIGAN AVE. CHICAGO, ILL. U.S.A.

8000 ITEMS FOR ALL MAKES DOMESTIC COMMERCIAL AIR CONDITIONING



Everything Needed

PARTS-SUPPLIES-TOOLS

FOR SERVICING and INSTALLING ALL MAKES OF REFRIGERATION EQUIPMENT

We have what you need for repairing and installing all types of domestic and commercial refrigeration equipment. Our stock is complete. Our service is speedy and accurate. We are as near you as your telephone. Send business card or letterhead for our elaborate Free catalog.

WHOLESALE ONLY
For Your Protection

AIRO SUPPLY COMPANY
Successors to Utilities Engineering Sales Co.
Telephone: DELaware 5350 408-10 N. Wells St., Chicago

SAVES SERVICE CALLS

and spoiled merchandise by eliminating burned-out motors

ERMSTAT

FULLY AUTOMATIC MOTOR CONTROL

Distributors:
MELCHIOR ARMSTRONG DESSAU COMPANY
NEW YORK PHILADELPHIA BOSTON BALTIMORE
ERMSTAT COMPANY
105-29 WYLLIE ST. PHILADELPHIA



Group Subscription Rates



The following special rates are for PAID-IN-ADVANCE subscriptions only in the United States and Possessions and Pan-American Postal Union Countries. Charge orders are billed at the single-subscription rate, regardless of number. Papers will be mailed to individual addresses.

	Electric Refrigeration News (weekly)	1935 Refrigeration Directory and Market Data Book (2 volumes)	Both Electric Refrigeration News and Directory and Data Book
1 subscription	\$3.00	\$5.00	\$8.50
5 or more each	2.75	4.50	6.50
10 or more each	2.50	4.00	6.50
20 or more each	2.25	3.50	5.75
50 or more each	2.00	3.00	5.00
75 or more each	1.75	2.50	4.25
100 or more each	1.50	2.00	3.50
For All Other Countries (Except Canada)			
1 subscription	\$5.00	\$6.00	\$9.00
5 or more each	4.75	5.50	8.50
10 or more each	4.50	5.00	8.00
20 or more each	4.25	4.50	7.50
50 or more each	4.00	4.00	7.00
Canadian Rates (including tariff of 5 cents per copy on the News)			
1 subscription	\$6.00	\$6.00*	\$11.00*
5 or more each	5.75	5.50*	10.50*
10 or more each	5.50	5.00*	10.00*
20 or more each	5.25	4.50*	9.50*
50 or more each	5.00	4.00*	9.00*

*Canadian subscribers are required to pay a tariff and excise tax on the Directory and Market Data Book which amount to \$1.00. These extra charges on books will be collected by the Canadian postoffice at the time of delivery.

Subscription Order

Business News Publishing Co.
5229 Cass Ave., Detroit, Mich.

Date.....

☐ Enter my subscription to Electric Refrigeration News for one year (52 issues).

☐ Send the 1935 Refrigeration Directory and Market Data Book (2 volumes).

☐ Enclosed find remittance. (See rates above.)

Name

Attention of In Care of

Street Address City and State.....

We sell the.....refrigerator and.....
(Please indicate other products or principal line of business.)

9-11-35

QUESTIONS

Steel Flare Nuts

No. 2445 (Manufacturer, Washington)—"We are anxious to make contact with a manufacturer of steel flare nuts for refrigeration tubing work."

Answer: Try Commonwealth Brass Corp., 5781 Commonwealth Ave., Detroit; and Imperial Brass Mfg. Co., 564 S. Racine Ave., Chicago.

Use of Float Valves

No. 2446 (Manufacturer, England)—"Rumor here American manufacturers of household refrigerators generally abandoning float valves in favor of expansion valves. Please cable facts."

Answer: Investigation indicates some important users of float valves will field test expansion valves to a limited extent next year.

'Frostair' Service

No. 2447 (Dealer, New Jersey)—"Have you ever published in any of your issues the servicing of the 'Frostair' refrigerator manufactured in Boston, Mass.?"

"If you have not can you advise me where I can secure this information as I need it promptly."

Answer: We have not published any service information on the Frostair unit. Try B. F. Sturtevant Co., Hyde Park, Mass.

Ice Refrigerator Sales

No. 2448 (Publishing Company, New York)—"We are endeavoring to obtain information as to the market for ice refrigerators in various parts of the country."

"Are any figures available as to sales of ice refrigerators by states during the past two or three years? If individual state figures have not been compiled, can you give us any idea as to what sections of the country have proved the best markets for ice refrigerators?"

Answer: Sales of household ice refrigerators by years, but not by sections, are published in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK, in which are published all known statistical and market data facts concerning the electric refrigeration and air conditioning industries.

It might be possible to get an idea of the territorial distribution of ice refrigerator sales by addressing the National Refrigerator Manufacturers Association, 205 W. Wacker Drive, Chicago, Ill.

Majestic Service Data

No. 2449 (Dealer, Quebec, Canada)—"Please send us particulars of your service manual on Majestic hermetic refrigerators."

Answer: Instructions covering service operations on the Majestic hermetic units were published in the Aug. 16, 1933, issue of ELECTRIC REFRIGERATION NEWS. Back issues of ELECTRIC REFRIGERATION NEWS are available at a cost of 10 cents each.

Sales in Chicago Area

No. 2450 (Reader, Illinois)—"Can you kindly furnish me the following information?"

"How many electric refrigerators are there in the greater Chicago area; or in Cook county, Illinois?"

"How many sold in the Chicago area or Cook county in the last 10 years?"

"How many in the New York City area in the last 10 years?"

"Average operating cost per month any group of units (per unit) medium size?"

"If you cannot supply this information possibly you will inform me where same may be obtained."

Answer: All statistical and market data available concerning the electric refrigeration industry are published in the 1935 REFRIGERATION AND AIR CONDITIONING MARKET DATA BOOK. This book does not give average operating costs, and we do not know where operating cost data is available.

Refrigerant Containers

No. 2451 (Service Firm, Pennsylvania)—"Enclosed find check for \$3 as an advance order for the MASTER SERVICE MANUAL when published, and also send us free of charge reprints of Newcum articles published to the present."

"Can you inform us who makes refrigerant containers?"

Answer: The 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY lists the Prest-O-Lite Co., Inc., 30 E. 42nd St., New York City, as a manufacturer of refrigerant containers.

Lubricating Oils

No. 2452 (Manufacturer, England)—

"We shall be much obliged if you could let us have the names and addresses of various American firms manufacturing a lubricating oil suitable for use on refrigeration compressors operating on sulphur dioxide and methyl chloride."

"We should also be interested in knowing the names and addresses of firms manufacturing motor pulleys and fans complete."

Answer: Manufacturers of lubricating oil suitable for use in refrigeration compressors are listed on page 308 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Manufacturers of pulleys are listed on page 272 of the DIRECTORY.

Commercial Cases

No. 2453 (Reader, New York)—"Please advise me where I could buy or get a list of manufacturers of commercial refrigeration show cases."

Answer: Manufacturers of refrigerated show cases are as follows: The Dry-Kold Refrigerator Co., Niles, Mich.

Fogel Refrigerator Co., 519 Bainbridge St., Philadelphia, Pa.

Koch Butchers' Supply Co., 14th, Gentry & Howell Sts., North Kansas City, Mo.

Puffer-Hubbard Mfg. Co., 2601 32nd Ave., S., Minneapolis, Minn.

Seeger Refrigerator Co., Arcade Wells & Whitehall Sts., St. Paul, Minn.

Weber Showcase & Fixture Co., 5700 Avalon Blvd., Los Angeles, Calif.

Domestic Evaporators

No. 2454 (Distributing Representative, New York)—"We are interested in receiving quotations on domestic sized evaporators of the 2, 3, and 4-tray types."

"We have written firms listed below concerning this matter, but we are under the impression that there must be other manufacturers who have come into the picture since the last issuance of the 'Refrigeration Guide.'"

"Trenton Auto Radio Works, Trenton, N. J."

"Thermal Units Mfg. Co., Chicago, Ill."

"McCord Radiator & Mfg. Co., Detroit, Mich."

Answer: On page 252 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY, manufacturers of evaporators for household refrigerators are listed. We don't know of any other manufacturer which has started to make evaporators of household units since this DIRECTORY came out.

Rice Oil & Refrigerant

No. 2455 (Sales and Service Company, Ohio)—"Will you please advise where we can learn what kind of oil and refrigerant, and how much of each is required in a Rice refrigerator Model 265-P-30."

Answer: Write Isaac Rice, Jr., 295 Fifth Ave., New York City; or Rex Cooling Industries, Inc., 291 Adams St., Brooklyn, N. Y. for this information.

Hard Rubber Doors

No. 2456 (Distributor, Illinois)—"Will you kindly forward the names and addresses of manufacturing concerns who make hard rubber doors for refrigerated counters?"

Answer: The following companies manufacture hard rubber doors for refrigerated counters: American Hard Rubber Co., 11 Mercer St., New York, N. Y. Luzerne Rubber Co., Trenton, N. J. Miller Rubber Products Co., S. High St., Akron, Ohio.

Welsbach Service Parts

No. 2457 (Attorney, New York)—"Will you kindly advise whether or not you can furnish the address of the Welsbach Co., a refrigeration manufacturing company which I believe is now defunct."

"If you are unable to furnish me with the address of this company will you kindly advise me whether or not you can give me the address of any company which can furnish parts for the machine formerly manufactured by the Welsbach Co."

Answer: Parts for the Welsbach refrigerator are available by addressing the Welsbach Co., Essex and Ellis Sts., Gloucester City, N. J.

Reversible Oil Pump

No. 2458 (Manufacturer, Pennsylvania)—"We are in the market for a small oil pump which is reversible and has a capacity of one gallon a minute, with five pounds minimum pressure, and operating at approximately 1,750 r.p.m."

Answer: Try Westco Pump Corp., 23 Gaines St., Davenport, Iowa.

Replacement Parts

No. 2459 (Service Company, Minnesota)—"We are interested in the purchase for resale of standard replacement lines of the following: bellows type shaft seals, crankshafts, pistons, piston rings, connecting rods. Can you refer us to the manufacturers of these lines?"

Answer: Manufacturers of stand-

CLASSIFIED

RATES: Fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS WANTED

AT PRESENT EMPLOYED as manager of southern office of nationally known manufacturer of refrigeration equipment but seeking a better opportunity. Have national acquaintance and background embracing all phases of commercial condensing units and parts sales and all types of application. Have preference for southeastern territory. Box 726, Electric Refrigeration News.

EXPERIENCED buyer refrigeration and air conditioning equipment wants position with reputable concern. Six years in charge purchasing, stock keeping, material control and follow-up for large refrigeration company. Also experienced in personnel and employment work. Will accept any reasonable starting salary. Best of references. Detroit or New York State preferred. Box 727, Electric Refrigeration News.

REFRIGERATING ENGINEER and designer. Over 25 years' experience designing, developing and building highest type commercial and institutional refrigerators, display cases, cooling rooms, etc. for any purpose. Can estimate cost, direct complete layout, production and installation of entire equipment, instruct salesmen and close contracts. Address Box 728, Electric Refrigeration News.

EXPERIENCED refrigeration man desires work with large distributor or dealer but preferably with manufacturer or parts factory in Middle West. Excellent technical training. Experienced with general layouts, installation and servicing of commercial and household units, water coolers, etc. (Married.) Address H. H. Binder, 216 E. Lincolnway, La Porte, Ind.

EQUIPMENT WANTED AND FOR SALE

WE WILL purchase for cash any quantities of electric motors, supplies, materials and equipment of any nature. We have a supply of new 1/4 HP Wagner refrigeration motors—DC—AC 25, 40 and 50 cycles at bargain prices. United Electric Salvage Co., 514 W. 38th St., New York, N. Y.

EQUIPMENT WANTED

WANTED FOR EXPORT by responsible distributor quantity of discontinued electric refrigerators, any year, make or size. Also any nationally known used electric refrigerators in any quantities. We can use any amount of commercial units, or any refrigerator equipment. We pay cash. Artic Export Sales Co., 6 West 15th St., New York, N. Y.

SCHOOLS

REFRIGERATION-AIR CONDITIONING. Theory and practice taught thoroughly by our course combining class room and laboratory work. Our course teaches installation, servicing, estimating and engineering sales. Resident School. Inquiries or inspection invited. Three months full time course available. Detroit School of Refrigeration, 6517-6519 Grand River, Detroit, Mich.

REPAIRS

HALELECTRIC thermostat repair service. B & B, G.E., Cutler-Hammer, Penn. Ranco, Tag, etc. Expansion valves repaired. Gas service, Ethyl, Methyl, Iso-Butane, Sulphur. Your cylinder or ours. Competitive prices. Halelectric Laboratory, 1793 Lakeview Road, Cleveland, Ohio.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. Van Deventer (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

If You Need a Trained Refrigeration Man—

• call on this FREE Placement Bureau.
• Among the graduates of this school we have trained and competent shop mechanics, and efficient installation and service men available in almost every locality. Many already have practical working experience.
• Save time, trouble and money by patronizing this service when adding to your force or making a replacement. No charge to you or to prospective employer. Write, phone or wire for quick, courteous, efficient service.

Placement Division

Utilities Engineering Institute

404 N. Wells St. 1841 Broadway
Chicago, Illinois New York, N. Y.

and replacement parts you mention are listed in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY. Manufacturers of bellows type shaft seals are listed on page 272, manufacturers of crankshafts on page 267, and manufacturers of connecting rods on page 267.

For pistons, we would refer you to Spencer-Smith Machine Co., Howell, Mich., and the Iceless Refrigeration Accessories Co., 2401 Chestnut St., Philadelphia, Pa.; and for piston rings, to the Iceless Refrigeration Accessories Co., and the Wausau Motor Parts Co., Wausau, Wis.